



California's Teaching Force

Key Issues and Trends

The Center for the Future of Teaching and Learning

Research conducted by SRI International

California State University

University of California, Office of the President

WestEd

2008



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The Center for the Future of Teaching and Learning

Working to improve education for all students by strengthening the teaching profession



TEACHING AND CALIFORNIA'S FUTURE

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DEDICATION

This 10th-anniversary report is dedicated to co-chairs Karl Pister and Stan Hitomi, who have worked tirelessly on behalf of the *Teaching and California's Future* Task Force. Their stewardship continues to bring together important stakeholders to work on the most pressing education issues of our day on behalf of California's children.

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ABBREVIATIONS

AB	Assembly Bill
API	Academic Performance Index
APPLE	Assumption Program of Loans for Education
AYP	Adequate Yearly Progress
BTSA	Beginning Teacher Support and Assessment
BTTP	Bilingual Teacher Training Program
CAHSEE	California High School Exit Examination
CALPADS	California Longitudinal Pupil Achievement Data System
CalSTRS	California State Teachers' Retirement System
CALTIDES	California Longitudinal Teacher Integrated Data Education System
CaMSP	California Mathematics and Science Partnership
CBEDS	California Basic Educational Data System
CBEST	California Basic Educational Skills Test
CCST	California Council on Science and Technology
CCTC	California Commission on Teacher Credentialing
CDE	California Department of Education
CertSMP	Certificated Staff Mentoring Program
CFASST	California Formative Assessment and Support System for Teachers
CFTL	Center for the Future of Teaching and Learning
CLAD	Crosscultural Language Academic Development
COLA	Cost of Living Adjustment
CSET	California Subject Examinations for Teachers
CSMP	California Subject Matter Projects
CST	California Standards Test
CSU	California State University
CTE	Career Technical Education
CTEL	California Teachers of English Learners
DOF	Department of Finance
EAP	Early Assessment Program
EL	English Learner
ELD	English Language Development
ELPD	English Learner Professional Development
FACT	Formative Assessment for California Teachers
FAST	Fresno Assessment of Student Teachers
GED	General Educational Development
GRE	Graduate Record Examination
HOUSSE	High, Objective, Uniform State Standard of Evaluation
IHE	Institution of Higher Education
ITSDR	Instructional Time and Staff Development Reform
LEA	Local Educational Agency
MRPDP	Mathematics and Reading Professional Development Program
MSTI	Math and Science Teacher Initiative
NBPTS	National Board for Professional Teaching Standards

NCLB	No Child Left Behind Act of 2001
PACT	Performance Assessment for California Teachers
PAIF	Professional Assignment Information Form
PAR	Peer Assistance and Review
PMAT	Personnel Management Assistance Team
QEIA	Quality Education Investment Act
REL	Regional Educational Laboratory
RICA	Reading Instruction Competence Assessment
SAT	Scholastic Aptitude Test
SB	Senate Bill
SBE	State Board of Education
SDAIE	Specially Designed Academic Instruction in English
SEID	Statewide Educator Identifier
STEM	Science, Technology, Engineering, and Mathematics
TAP	Teaching as a Priority
TCF	Teaching and California's Future
TPA	Teaching Performance Assessment
TPE	Teaching Performance Expectations
UC	University of California
VPSS	Verification Process for Special Settings

EXECUTIVE SUMMARY

California, like the rest of the United States, is caught in a severe economic crisis. Because of the state's prominent role in funding education, broader economic strains directly affect education spending. After the longest budget stalemate in the state's history, the Governor signed a budget that kept elementary and secondary funding relatively flat for 2008-09. However, in early November 2008, the Governor announced that the national financial turndown had affected the budget "to a point where the state faces the very real possibility of running out of the necessary cash to meet all its obligations." In light of this situation, the Governor has proposed mid-year cuts for 2008-09 totaling \$4.5 billion, including \$2.5 billion for K-14 education. In addition to these cuts, education leaders are already concerned about 2009-10. The underlying fear is that the state's ongoing budget crisis will erode the strength of the teacher workforce if districts are forced to reduce staff to meet their bottom line.

"The budget uncertainties come at a time when we are asking more of our schools and teachers."

The budget uncertainties come at a time when we are asking more of our schools and teachers. Schools have to meet proficiency levels that were recently ratcheted up to address federal requirements. Teachers are under pressure to raise student test scores to meet these new proficiency levels while preparing their students to develop the skills for further education and participation in the 21st-century labor market. These conditions may be exacerbated by the recent decision of the State Board of Education—now called into question by a court case—to require that all eighth graders be assessed in Algebra I. Whether or not the State Board's eighth-grade testing decision stands, there is a heightened need to recruit, prepare, retrain, and support middle school mathematics teachers who can ensure that students succeed in Algebra I. There also must be a concurrent buildup of subject matter knowledge and instructional skill for teachers in earlier grades so that students are well prepared for Algebra I and higher mathematics.

Outcome data suggest that we have far to go to meet these challenges. Fewer than half of students in the state are proficient in English and mathematics, more than one in five drop out entirely, and among those who do graduate, large numbers are not prepared for higher education or for the workforce. More than 2,000 schools statewide have been identified as needing improvement for failing to meet state proficiency targets.

To address these challenges, state policymakers over the past few years have taken aggressive steps to strengthen the teaching profession, streamline credentialing, and recruit new teachers. The state has successfully reduced the large number of teachers without full credentials, from a high over 42,000 at the beginning of the decade to under 15,500 in 2007-08. Yet the state must continue to address the ongoing maldistribution of underprepared teachers, who disproportionately teach in the state's lowest-performing schools, in the inland regions of the state that have experienced enrollment growth in recent years, at the secondary level, and in special education.

Without careful planning at the state level, school districts could face teacher shortages similar to those experienced after the implementation of the Class Size Reduction program in the 1990s. To head off potential shortages, policymakers will need access to accurate and timely data on the teacher workforce. Unfortunately, California is far behind other states in building such a data system. Before 2007-08, information on the state's teacher workforce was collected by numerous state and local agencies, and was housed in different data management systems, and could not be integrated. An effort to

ameliorate this problem is under way—the California Longitudinal Teacher Integrated Data Education System (CALTIDES)—which will provide some data on teachers from hiring through retirement or movement out of the system. However, the timeline for the CALTIDES rollout has been delayed, and it remains unclear whether the system will provide in a timely manner the necessary data on which policymakers can reliably base decisions.

TEACHING AND CALIFORNIA'S FUTURE

It is within this context of a severe budget crisis and increasing concern about students' preparation for postsecondary education and the workforce that the Center for the Future of Teaching and Learning presents its 10th annual report on the status of the teaching profession in California. These reports, part of the Center's Teaching and California's Future (TCF) initiative, are meant to provide California policymakers with objective and timely data on the state's teacher workforce. TCF has five central goals:

1. Every student will have a fully prepared and effective teacher.
2. Every district will be able to attract and retain fully qualified, effective teachers.
3. Every teacher will work in a safe, clean facility conducive to learning; have adequate materials with which to teach; and have the guidance and support of a capable leader.
4. Every pathway into teaching will provide high-quality preparation and be based on California's standards for what students should know and be able to do.
5. Every teacher will receive high-quality support as he or she begins teaching, as well as continuing professional development, to ensure that he or she stays current in his or her field.

THE 2008 REPORT

This year's report provides an update on California's teacher workforce and state policies that affect the teacher development system. We examine overall trends in the workforce and discuss the demand for teachers, the distribution of underprepared teachers, and the implementation of a statewide data system to improve the quality and accuracy of data on the teacher workforce. We also focus on the state's systems for preparing and supporting teachers and highlight key programs that provide induction support for new teachers and professional development of the workforce as a whole. Finally, we take an in-depth look at the challenges the state faces in preparing all students for work, civic life, and postsecondary education in the 21st century and examine the implications for the teacher workforce of recent efforts to improve secondary education and mathematics and science education.

Throughout the report, we provide information regarding the implementation of several key teacher-related bills passed in 2006, including SB 1209, an omnibus teacher workforce bill authored by Senator Scott. We also discuss new legislation passed in 2008 that continues the state's efforts to reduce barriers to entry into the profession, while strengthening the supports available for new and veteran teachers. Some of these bills specifically target career technical education (CTE), mathematics, and science teachers—

teachers who are particularly critical in the state's efforts to prepare a more skilled and technical workforce that can meet the demands of the 21st-century global economy. Findings for this report are based on secondary analyses of state teacher databases, reviews of legislative and budget documents, and interviews with administrators of the state's major teacher development programs.

“...disproportionate percentages of under-prepared teachers remain in high-need areas.”

THE CURRENT TEACHER WORKFORCE

Since 2000-01, there has been a concerted effort across California to reduce the large numbers of underprepared teachers in the state's teacher workforce. The state has made substantial progress over the last 7 years, reducing the total number of underprepared teachers from more than 42,000 to fewer than 15,500. Still, disproportionate percentages of underprepared teachers remain in high-need areas. Currently, additional efforts are needed to reduce the inequity in the percentages of adequately prepared teachers in certain regions of the state (such as many inland counties), in low-performing schools, and in specific authorizations (including secondary and special education credentials). Attracting teachers to these high-need areas has proven challenging, and newly implemented state programs designed specifically for hiring and retaining teachers in these areas have not been in place long enough to measure their impact. Additionally, this year's budget shortfalls and broader economic issues may affect the teacher workforce in unanticipated ways. The impact of these factors is difficult to gauge in the absence of a statewide data system in place to track teacher movement.

Key findings:

- Projected student enrollment trends demonstrate the regional nature of teacher labor markets. Student enrollment is projected to increase in the state's inland regions and in the elementary grades, suggesting continued demand for teachers in those areas. At the same time, student enrollment is projected to be stable or decline along the coast of southern and northern California, and enrollment is projected to decline in the high school grades.
- Historically high retirements statewide are expected to contribute to a continued demand for teachers but will affect some counties more than others.
- State and district budget timelines require districts to make decisions about staffing before they know their final budgets. In an uncertain budget climate, this situation can result in large numbers of layoff notices being sent to teachers—even though some or most of these may be later rescinded, as they were in 2008.
- Regardless of overall trends in the demand for teachers in the state, districts have not always been able to hire fully credentialed teachers to fill all open positions. However, the population of underprepared teachers across the state continues to decline, from over 42,000 underprepared teachers (roughly 14% of the overall workforce) in 2000-01 to under 15,500 (roughly 5% of the overall workforce) in 2007-08.
- These underprepared teachers continue to be inequitably distributed, with concentrations in particular counties and regions of the state, at the secondary level, and in special education. For example, in 2007-08, 5% of teachers authorized to teach at the secondary level and 11% of teachers authorized to teach special education lacked a full credential, compared with 2% of teachers authorized to teach at the elementary level.

- Underprepared teachers are also concentrated in the lowest-performing schools. In 2007-08, the average percentage of underprepared teachers was 9% in those schools, compared with 2% in the highest-performing schools.

PREPARING AND SUPPORTING CALIFORNIA'S TEACHERS

“...enrollment in teacher preparation programs and credential production continue to decline...”

Regardless of shifts in the overall demand for teachers across the state, in certain regions, or in specific content areas, policymakers and local educators need to focus on preparing new teachers and supporting those already in the profession. Yet, enrollment in teacher preparation programs and credential production continue to decline, especially in multiple-subject credential programs that prepare future elementary teachers, while the number of individuals earning teaching credentials through the state's intern program continues to grow. Meanwhile, the state has invested in programs to induct and mentor novice teachers, including the Beginning Teacher Support and Assessment (BTSA) program and the recently created Certificated Staff Mentoring Program (CertSMP). Funding for teacher professional development programs has remained relatively flat over the last few years. Some of these programs offer districts, schools, and teachers some discretion over the use of funding; other programs are targeted to specific subject areas and student populations.

Key findings:

- Enrollment in teacher preparation programs declined, from nearly 78,000 in 2001-02 to under 60,000 in 2005-06, largely as a result of decreased enrollment in multiple-subject credential programs.
- The number of credentials issued has also declined, from a peak in 2003-04 at over 27,000 to approximately 20,000 in 2006-07, a drop of 25%. This decline also has been driven by a decrease in the number of multiple-subject credentials issued.
- Implementation of the various provisions of SB 1209 passed in 2006 is now under way, but it is too early to determine impact. The legislation streamlined credentialing for teachers, simplified testing requirements, and made it easier for out-of-state teachers to earn a credential in California.
- Teacher preparation programs have moved forward with the implementation of teaching performance assessments, despite concerns about funding to train and pay for assessors.
- Unlike enrollment in traditional teacher preparation programs, enrollment in the state's intern program continues to grow. Between 2005-06 and 2006-07, the number of intern credentials issued by the state increased by more than 1,000, or 19%.
- Interns are much more likely to be placed in the lowest-performing schools. In 2007-08, 53% of interns taught in schools in the lowest quartile of the Academic Performance Index (API), while only 8% of interns taught in the highest-quartile schools.
- The state's long-standing Beginning Teacher Support and Assessment program and the new Certificated Staff Mentoring program provide mentoring and support for teachers who are new to the profession. BTSA has been streamlined to better meet participants' individual needs and to reduce redundancy with teacher preparation, while CertSMP provides financial incentives for veteran teachers to work with interns and newly credentialed teachers in low-performing schools.

- The state and federal governments continue to provide millions of dollars for teacher professional development programs, some of which provide targeted training, focused on specific subject areas and student populations, while others provide districts, schools, and teachers with flexibility over the use of funds. One example of targeted training is the state's increasing focus on training teachers to better serve the state's large English learner population. Funding for professional development has remained stable over the last few years.

THE CHALLENGE OF PREPARING STUDENTS FOR THE 21ST CENTURY

In the face of demographic shifts, a decline in new teachers entering the profession, plummeting budgetary fortunes, and struggles to maintain programs to support teachers, policymakers and local educators face the growing challenge of preparing students for postsecondary education and the ever-evolving workforce demands of the 21st century. California will need an increasingly highly educated workforce, and students without reasonable levels of educational attainment will have fewer options for meaningful employment. At a time of decreasing resources, the pressure on the school system to do more with less has never been greater.

“...policymakers and local educators face the growing challenge of preparing students for post-secondary education and the ever-evolving workforce demands of the 21st century.”

Current levels of achievement do not portend future success. Of particular concern is the secondary school population. More than one in five students entering ninth grade do not graduate from high school. Of those who do graduate, only a little more than a third are prepared to go on to a 4-year college, and many of those need remediation once they get to college. The statistics are far worse for the state's Latino and African-American students—they continue to achieve at lower levels and drop out at higher rates than their white and Asian peers. These facts raise the question of what can be done to support teachers, across all levels of the system, regardless of their formal preparation, to develop the skills and knowledge to help all students be prepared for higher education, work, and life in the 21st century. Efforts to reform high schools, grow Career Technical Education (CTE) programs, and improve mathematics and science education all require investments in the teacher workforce.

Key findings:

- Recent efforts to improve student achievement and reduce dropout rates have focused on making high schools more engaging, challenging, and personalized. These efforts require a skilled workforce, but many teachers lack even minimal qualifications in their content areas: one-quarter to one-third of high school teachers in each of the core subject areas—social science, physical and life sciences, English, and mathematics—are either underprepared, teaching out of field, or in their first or second year of teaching.
- Although data on the state's 8,500 CTE teachers are limited, the state has invested significant resources in CTE as one strategy for improving student outcomes. Policymakers passed legislation in 2008 (SB 1104, Scott) that both streamlines CTE credentialing, thereby making it easier for prospective industry professionals to enter teaching, and strengthens CTE preparation.
- An additional concern is the concentration of underprepared mathematics and science teachers in the lowest-performing schools. In 2007-08, 13% of secondary mathematics teachers in the lowest-performing schools were underprepared, compared with 4% in the highest-performing schools. The figures were 13% and 3%, respectively, in science.

- The state's 4-year public university systems have been engaged in efforts to produce more mathematics and science teachers. From 2002-03 to 2006-07, CSU experienced a 68% increase in the number of mathematics and science credentials, from 768 to 1,289. During that same period, the number of new mathematics credentials issued by UC increased by 55%, from 75 to 116, but the number of new science credentials issued declined by 25% from 134 to 100.
- Gains in mathematics credential production are attributable largely to the introduction in 2003 of the foundational-level mathematics credential, which authorizes the teaching of mathematics through Algebra I and II and geometry. Since 2003, the number of individuals earning a mathematics authorization has increased by nearly 80%. A new foundational-level science credential may also help to increase the numbers of individuals earning science authorizations.
- The push to get more students to take Algebra I in the eighth grade requires significant resources and support for teachers and students alike. However, in 2007-08, one-third of the state's nearly 3,800 middle school algebra teachers were either underprepared or held a full credential in a different subject area. These teachers collectively taught more than 81,000 middle school students. In middle schools with the lowest CST Algebra I proficiency rates, 54% of the algebra teachers were fully credentialed and authorized to teach mathematics, compared with 70% in the schools with the highest proficiency rates.

CONCLUSIONS

The data in this, our 10th annual report, underscore the progress that we have made as a state. The absolute number of underprepared teachers has been cut dramatically, and an increasing number of those teachers are getting more structured support through the state's intern program. This improvement is the result of several related factors, including the concerted efforts of policymakers at the state and local levels to lower barriers to the profession, increase support for teacher preparation, and attract more qualified candidates into the profession.

Concurrent with these improvements, however, has been a steady increase in expectations for the state's K-12 educational system. As standards have risen and the severe teacher shortage abated, policymakers and educators have turned greater attention to issues of teaching quality. Teacher candidates must now pass a performance assessment to earn a credential, and preparation institutions can benefit by considering those data as they work to improve their programs. New support structures have been put in place for interns. The state's induction program has been revamped to build on teachers' existing knowledge, skills, and abilities. Some flexibility has been added to state-supported professional development programs. And the state is in the process of launching new systems to better track students and teachers.

Unfortunately, the state's fiscal crisis threatens to undermine much of this progress. Looming cuts to the education budget may result in teacher layoffs—but at a minimum will make teachers' jobs less secure and consequently less attractive to our brightest college graduates. We urge policymakers to stay focused on building the systems that will give California the kind of strong teaching force it will need to meet the educational challenges it faces—and to help the state's economy thrive.

RECOMMENDATIONS FROM THE CENTER FOR THE FUTURE OF TEACHING AND LEARNING

Addressing Teacher Shortages. Although California has made significant strides in decreasing the number of underprepared teachers, major challenges remain. This is no time for complacency, given shortages in high-need schools, core subject matter areas, geographic regions and special needs programs. Further, the State Board of Education's decision to require that eighth grade students be tested on algebra—now challenged in the courts—has opened serious debate on mathematical literacy and its implications for teacher preparation and professional development in middle schools and in the elementary grades, where success in higher mathematics begins.

We recommend that the Governor and the legislature review (1) evidence of why these shortages continue to exist in certain schools, subject matter areas, and programs where fully prepared teachers are needed most, as well as (2) the scope and viability of existing efforts to ensure equity. Based on these reviews, we recommend the development of a strategic plan designed to ensure access for all students to a fully prepared and effective teacher. With respect to immediate demands to build mathematical literacy, we recommend that the strategic plan identify essential steps along with the corresponding resources needed to strengthen math education in elementary and middle schools over each of the next four years.

Creating a Teacher Development System. California lacks a systemic approach to routinely provide the numbers of teachers needed throughout the state and the quality of teaching required to ensure students' academic success. A coherent, consistent teacher development system must include a set of reliable measures of teachers' knowledge and skills. These measures should provide a bridge across the components of preparation, induction, professional development, and accomplished teaching.

We recommend that the existing assessments within each component of the teacher development continuum—preparation, induction, evaluation, and accomplished teaching—be modified as necessary to form a more cohesive and coherent teacher development system that promotes access to qualified and effective teachers for all students, builds capacity, eliminates duplication, and focuses on strengthening teaching practice.

Developing a Teacher Workforce Data System. The establishment of CALTIDES, the teacher information data system being developed in response to state statutes and federal reporting requirements, is a step toward providing policymakers with solid, reliable information on which to make decisions related to the state's teacher workforce—but it is only a first step. The information that will be provided under CALTIDES may not be sufficiently robust or detailed to assist policymakers with crucial decision-making. In particular, policymakers need data on the broader dimensions of teacher and administrator development, such as preparation and professional development, as well as timely information on where teachers and administrators serve and for how long, to evaluate the need for, and effectiveness of, efforts to ensure both equity and quality of teaching for all students.

We recommend that policymakers request the California Department of Education, in collaboration with the Commission on Teacher Credentialing, to develop a long-term plan for a more adequate state data system, including benchmarks of progress and funding estimates.

Examining High School Reform. California is not ensuring that students leave high school ready for postsecondary education, prepared for the workforce, and able to participate fully in civic life. Student performance indicators raise serious questions about the capacity of many California high schools to graduate students who are prepared to meet these challenges. Abysmal dropout rates add a sense of urgency to address this problem: one in every five California high school students now drop out of school. The state needs to invest in building teacher workforce capacity as a key strategy to reversing these dropout trends. Further, strengthening teaching must be considered in light of the need for a more cohesive and comprehensive approach to student success, from elementary and middle grades through high school.

We recommend that policymakers focus on identifying ways in which high school teachers and administrators can be effectively prepared and supported in order to provide the instruction, learning environment, and real-world connections that will reverse this trend, especially for those students at risk for dropping out of school.

Providing Adequate Resources and Reasonable Guidelines. The challenge of creating a coherent, consistent, and effective teacher development system in California is directly related to dollars. Recent research beyond our own shows that existing spending patterns and budget requirements may actually work against education equity and quality. Further, the deadlines set in state law for local school district budgeting and the state budget process itself are not conducive to sound decision-making. The recent budget crisis is likely to have a very serious impact on the current teacher workforce and the career plans of future teachers. Although many “pink slips” were eventually rescinded, we may have lost effective and experienced teachers to other states. If California is to have the highest expectations in the country for student achievement, we need a reliable school finance system that aligns resources with expectations while addressing wide disparities in the ability of schools to provide adequate support, assistance, and development for teachers.

We recommend reviewing resource levels and approaches designed to promote equity in California in comparison to other states. In addition, we recommend a review of the budget process specific to the realignment between the state and its public schools, with the goal of establishing a more reliable metric for school districts to use as they develop their annual budgets and make staffing decisions.

1. CONTEXT OF CALIFORNIA EDUCATION

California, like the rest of the United States, is caught in a severe economic crisis. Because of the state's prominent role in funding education, broader economic strains directly affect education spending. After the longest budget stalemate in the state's history, the Governor signed a budget that kept elementary and secondary funding relatively flat for 2008-09. However, in early November 2008, the Governor announced that the national financial turndown had affected the budget "to a point where the state faces the very real possibility of running out of the necessary cash to meet all its obligations" (California Office of the Governor, 2008a). In light of this situation, the Governor has proposed mid-year cuts for 2008-09 totaling \$4.5 billion, including \$2.5 billion for K-14 education. In addition to these cuts, education leaders are already concerned about 2009-10. The underlying fear is that the state's ongoing budget crisis will erode the strength of the teacher workforce if districts are forced to reduce staff to meet their bottom line.

"The budget uncertainties come at a time when we are asking more of our schools and teachers."

This year's budget crisis also highlighted two ongoing structural problems with the state and district budgeting processes—one related to funding, the second to timing. First, California has experienced a drop of more than 25 percentage points in per pupil expenditures relative to other states over the past 30 years. Whereas California spent 19% more than the average of all other states for each of its students in 1976-77, by 2004-05, the state was spending 8% less (Policy Analysis for California Education, 2008). Moreover, because of a series of judicial decisions and state propositions, the state's funding formula has led to wide disparities in per pupil spending at the district level—disparities that are not related to student need (Bersin, Kirst, & Liu, 2008). During tough economic times, when expenditures are flat or falling, this overall low level of funding, combined with a less than rational allocation system, can exacerbate the challenges, at the local level, of recruiting and retaining a strong workforce.

Second, the budget cycle works against districts trying to make responsible allocation decisions. Although district and state budgets must be approved by June 30, school districts must make staffing decisions much earlier. Under state law, preliminary layoff notices must be sent to teachers in March and final notices must be sent in May. Because the state budget often is not approved by June 30, school districts must make decisions about staffing and pass their budgets on the basis of anticipated revenues, not final revenues (EdSource, 2008). The process makes it difficult for districts to plan for the upcoming school year and to determine how to staff classrooms and, in years like this one, creates uncertainty for administrators and teachers alike. In fact, up to 14,000 teachers may have received initial layoff notices in 2008 because districts were unsure how much they would have to cut to balance their budgets. Some number of these teachers may have chosen to retire, accepting incentives offered by their districts, while others may have left the state in search of teaching jobs elsewhere or may have left the profession altogether. The state data system does not include sufficient information on teacher retirement and mobility to determine the full impact of the budget crisis.

The budget uncertainties come at a time when we are asking more of our schools and teachers. Schools have to meet proficiency levels that were recently ratcheted up to address federal requirements. Teachers are under pressure to raise student test scores to meet these new proficiency levels while preparing their students to develop the skills for

further education and participation in the 21st-century labor market. These conditions may be exacerbated by the recent decision of the State Board of Education (SBE)—now called into question by a court case—to require that all eighth graders be assessed in Algebra I.

Outcome data suggest that we have far to go to meet these challenges. Less than half of students in the state are proficient in English and mathematics, more than one in five drop out entirely, and among those who do graduate, large numbers are not prepared for higher education or for the workforce. More than 2,000 schools statewide have been identified as needing improvement for failing to meet state proficiency targets.

“...state policymakers over the past few years have taken aggressive steps to strengthen the teaching profession, streamline credentialing, and recruit new teachers.”

To address these challenges, state policymakers over the past few years have taken aggressive steps to strengthen the teaching profession, streamline credentialing, and recruit new teachers. California has successfully reduced the large number of teachers without full credentials, from over 42,000 at the beginning of the decade to under 15,500 in 2007-08. Yet the state must continue to address the ongoing maldistribution of under-prepared teachers, who disproportionately teach in the state’s lowest-performing schools, in the inland regions of the state that have experienced enrollment growth in recent years, at the secondary level, and in special education.

Without careful planning at the state level, school districts could face teacher shortages similar to those experienced after the implementation of the Class Size Reduction program in the 1990s. Whether or not the State Board’s eighth-grade testing decision stands, there is a heightened need to recruit, prepare, retrain, and support middle school mathematics teachers who can ensure that students succeed in Algebra I. There also must be a concurrent buildup of subject matter knowledge and instructional skill for teachers in earlier grades so that students are well prepared for Algebra I and higher mathematics.

To head off potential shortages, policymakers will need access to accurate and timely data on the teacher workforce. Unfortunately, California is far behind other states in building such a data system. Before 2007-08, information on the state’s teacher workforce was collected by numerous state and local agencies, and was housed in different data management systems, and could not be integrated. An effort to ameliorate this problem is under way—the California Longitudinal Teacher Integrated Data Education System (CALTIDES)—which will provide some data on teachers from hiring through retirement or movement out of the system. However, the timeline for the CALTIDES rollout has been delayed, and it remains unclear whether the system will provide in a timely manner the necessary data on which policymakers can reliably base decisions.

TEACHING AND CALIFORNIA'S FUTURE

It is within this context of a severe budget crisis and increasing concern about students' preparation for postsecondary education and the workforce that the Center for the Future of Teaching and Learning presents its 10th annual report on the status of the teaching profession in California. These reports, part of the Center's *Teaching and California's Future* (TCF) initiative, are meant to provide California policymakers with objective and timely data on the state's teacher workforce. TCF has five central goals:

1. Every student will have a fully prepared and effective teacher.
2. Every district will be able to attract and retain fully qualified, effective teachers.
3. Every teacher will work in a safe, clean facility conducive to learning; have adequate materials with which to teach; and have the guidance and support of a capable leader.
4. Every pathway into teaching will provide high-quality preparation and be based on California's standards for what students should know and be able to do.
5. Every teacher will receive high-quality support as he or she begins teaching, as well as continuing professional development, to ensure that he or she stays current in his or her field.

Research for the reports is conducted by a team at SRI International, an independent research and consulting organization. This year's report is based on secondary analyses of state teacher databases, reviews of legislative and budget documents, and interviews with administrators of the state's major teacher development programs. In the remainder of this first chapter, we lay out the status of student achievement in the state to underscore the challenges we face. We then highlight new teacher-related bills passed in 2008 and key bills from 2006 that are being implemented.

THE CHALLENGE OF LOW ACHIEVEMENT AND HIGH DROPOUT RATES

California has a set of ambitious standards for what students should know and be able to do. The state has established a high bar for what is considered "proficient" on the California Standards Tests (CSTs) and requires all high school students to pass an exit exam in order to receive a diploma. Here we describe how well students are performing relative to those standards—we find some progress, but the state has far to go to meet its goals. Most striking, the percentage of students who attain proficiency continues to decline between elementary and high school, and more than one-fifth of the state's students drop out entirely. Of those who do graduate, large numbers need remediation in college and/or do not have the skills to succeed in the workplace.

Recent California Standards Test results show modest gains across subject areas, while the achievement gap between African-American and Latino students and their white and Asian counterparts persists.

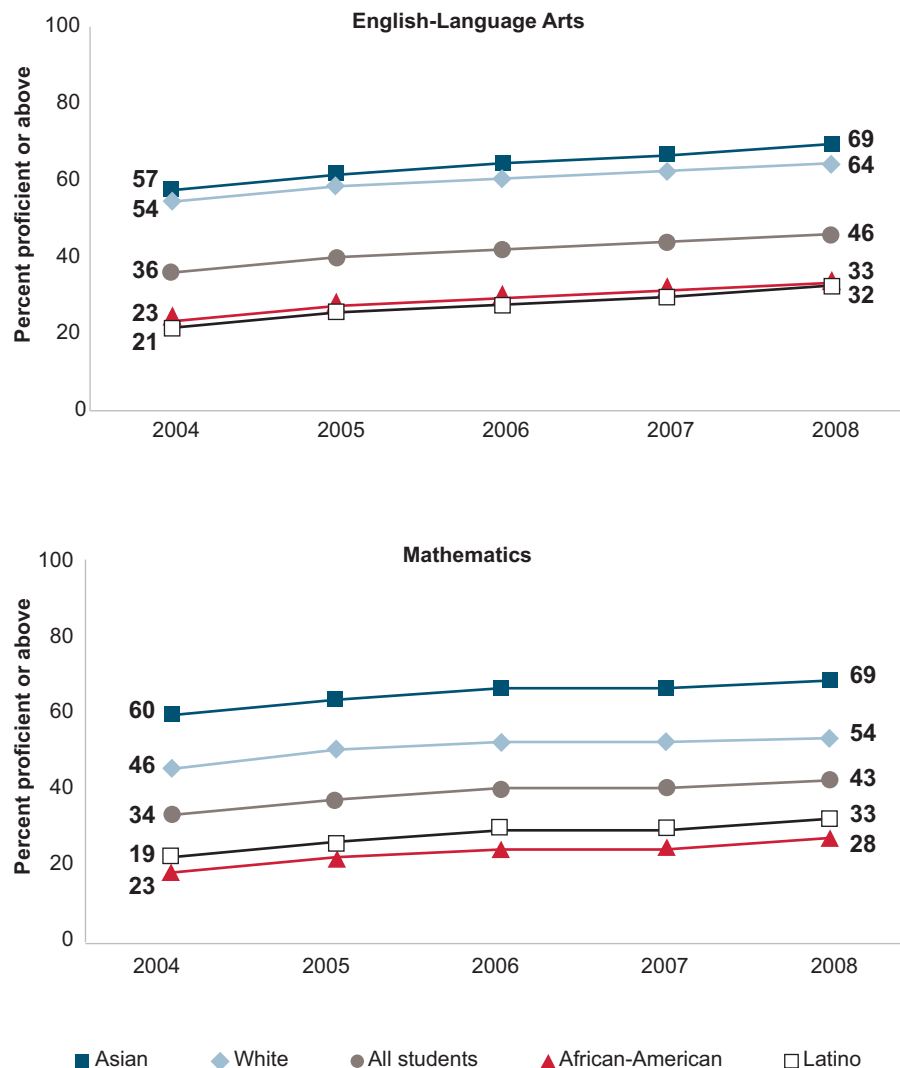
California students have made steady progress over the last several years on the CSTs, yet less than half are proficient in English and mathematics (Exhibit 1.1). Between 2004 and 2008, the percentage of students statewide scoring proficient or above on

the English-language arts CST increased by 10 percentage points, from 36% to 46%; in mathematics, the gains were similar, from 34% to 43% proficient or above (California Department of Education [CDE], 2008a).¹

While achievement among all subgroups of students has improved, the achievement gap between African-American and Latino students and their white and Asian peers still persists. In 2008, just 32% and 33% of Latino and African-American students, respectively, were proficient in English-language arts; in contrast, 64% of white students and 69% of Asian students attained proficiency. In mathematics, 33% of Latino students and 28% of African-American students were proficient, compared with 54% of white students and 69% of Asian students. The achievement gap in English-language arts has remained virtually the same since 2004, while it has narrowed slightly in mathematics (CDE, 2008a).

“While achievement among all subgroups of students has improved, the achievement gap between African-American and Latino students and their white and Asian peers still persists.”

Exhibit 1.1 CST Results, by Ethnicity, 2004-08



See Appendix B for source and technical information.

¹ CST results are reported as five performance levels: advanced, proficient, basic, below basic, and far below basic. Because the state's goal is for all students to score at or above proficient, we present data on the percentage of students who attained the proficient or advanced level.

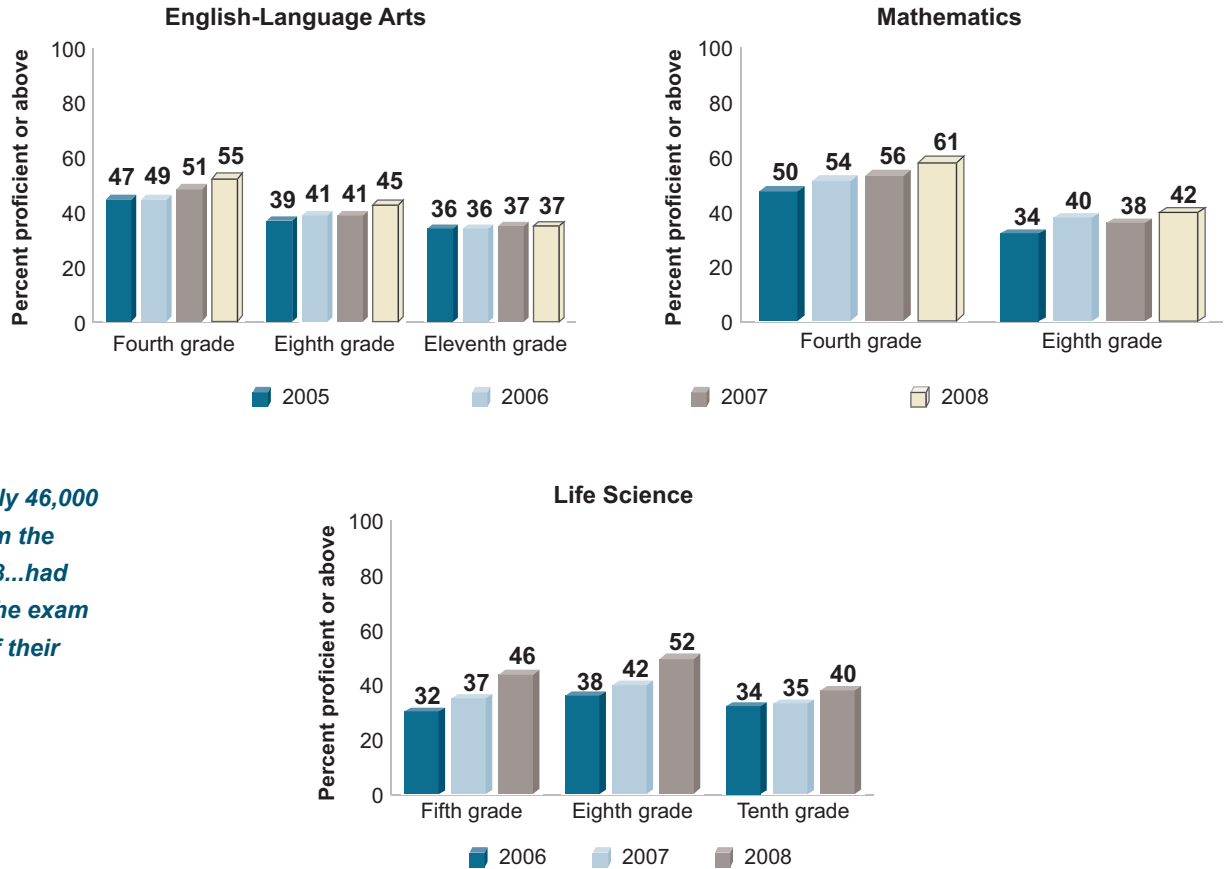
Student achievement in English and mathematics declines after elementary school.

This pattern of steady increases on the CSTs can be seen across most grade levels, although the biggest achievement gains have been at the elementary level (Exhibit 1.2). In both English and mathematics, student performance also is much higher during the elementary grades than in middle or high school. Of particular concern is the significant decline after fourth grade in the percentage of students who are proficient in mathematics. In 2008, 61% of fourth graders were proficient in mathematics. However, just 42% of all eighth-grade students who took the test scored proficient in Algebra I (CDE, 2008a), a figure that is especially troubling in light of efforts to encourage more students to take Algebra I in the eighth grade.² Furthermore, the percentage of eighth-grade students who were proficient in Algebra I was much lower among African-American (24%) and Latino (29%) students than among white (54%) and Asian (72%) students (CDE, 2008b). There are, however, many more students taking the Algebra I CST in eighth grade than in the past. In 1999, the first year the Algebra I CST was administered, 70,000 eighth-grade students, or 16%, took the exam. In 2008, that figure has more than tripled to 248,000, or 50.5% of eighth graders (CDE, 2008b). The proficiency rates in Algebra I were even lower among 9th-, 10th-, and 11th-grade students who took the exam.

Similar to student performance in mathematics, the percentage of students attaining proficiency in English-language arts is lower at the middle and high school levels than at the elementary level. In 2008, 55% of 4th graders were proficient in English-language arts, as were 45% of 8th graders and 37% of 11th graders. In life science, the percentage of students reaching proficiency has increased over time on the 5th-, 8th-, and 10th-grade exams, although the percentage of students scoring proficient or above is higher for the 8th grade exam (52%) than for either the 5th-grade exam (46%) or the 10th-grade exam (40%).

“This pattern of steady increases on the CSTs can be seen across most grade levels, although the biggest achievement gains have been at the elementary level.”

² Students from grades 2 through 7 take grade-level CSTs in mathematics that are aligned with the state's mathematics content standards. Because the mathematics standards for grades 8 through 12 are organized by discipline, such as algebra and geometry, and not by grade level, students take a discipline-specific mathematics CST. The general mathematics test is administered to students in grades 8 and 9 who are not enrolled in a discipline-specific mathematics course.

Exhibit 1.2 CST Results, by Grade and Subject, 2005-08

“Approximately 46,000 students from the Class of 2008...had not passed the exam by the end of their senior year”

See Appendix B for source and technical information.

Nearly 10% of the Class of 2008 had not passed the state’s exit exam by the end of their senior year.

Another indicator of student performance in the state comes from the California High School Exit Examination (CAHSEE). The requirement that all high school students must pass the CAHSEE to graduate and earn a diploma went into effect with the graduating Class of 2006. The CAHSEE is designed to test for basic competency in the state’s mathematics content standards for grades 6 and 7 and Algebra I, and in the content standards in English-language arts through grade 10. Students are provided multiple opportunities to take and pass both portions of the exam.

Among the graduating Class of 2008, an estimated 90% of students met the CAHSEE requirement as of the May 2008 administration (CDE, 2008c). Approximately 46,000 students from the Class of 2008, however, had not passed the exam by the end of their senior year (Becker, Wise, & Watters, 2008). Passage rates were lower for Latino students (86%) and African-American students (80%) than for white students (96%) and Asian students (96%). In addition, just 73% of English language learners and 54% of special education students passed the exam (CDE, 2008c).³ It is important to bear in mind that

³ Students with disabilities in the Class of 2008 were the first to be required to take and pass the exam to earn their diploma. In the previous two graduating classes (2006 and 2007), students with disabilities were exempt from the exit exam requirement.

these figures do not account for the large number of students who drop out of the system before graduating (discussed next).

More than one-fifth of California students drop out of school, with higher rates for Latino and African-American students.

In addition to concerns about low student achievement, state policymakers are increasingly alarmed by the large numbers of students dropping out of California schools, especially from high schools that serve predominantly low-income, African-American, and Latino students. There has been some debate, however, over the exact number of dropouts and the magnitude of the problem because of the challenges of measuring graduation and dropout rates in a state without a longitudinal student data system (Rumberger, 2007).⁴ In July 2008, CDE provided some clarity by releasing new graduation data based, for the first time, on student-level records. Each student in California public schools now has a unique identifying number that allows the state to determine more accurately whether or not students are completing their education. These data indicate that the state's "ninth grade to graduate rate" was 67.7% in 2006-07, meaning that of all the students who began high school in 2003, approximately two-thirds graduated (CDE, 2008d).⁵

"...more than one in every five California high school students drop out."

However, not all students who did not graduate should be considered dropouts—some, for example, may have passed the General Educational Development Test (GED) to earn a California High School Equivalency Certificate, while others may have transferred to private schools or left the state altogether.⁶ After we take such students into account, the "adjusted four-year derived dropout rate" was 21.5%, meaning that more than one in every five California high school students drop out. This figure represents approximately 109,000 students. Dropout rates vary across different ethnic groups, with figures ranging from 10% and 14% for Asian and white students, respectively, to 27% for Latino students and 36% for African-American students (CDE, 2008e). Previously, graduation and dropout data were reported statewide at the school level only. CDE anticipates that estimates of graduation and dropout rates will improve once 4 years of student-level withdrawal data have been collected.

Many California students are ill prepared for college.

Even among students who do graduate, far too few are leaving high school with the academic and technical skills needed for success in postsecondary education and in the workplace. Students in California who would like to attend a 4-year public university, either in the California State University (CSU) system or the University of California (UC) system, must complete and pass a set of courses known as the A-G requirements. In 2006-07, just 35% of 12th-grade graduates completed all the courses required for CSU and UC entrance; that figure ranged from 25% of Latino and African-American graduates to 60% of Asian graduates (CDE, 2008f).

⁴ California has just completed the process of assigning individual student identifiers that will eventually be tracked through the California Longitudinal Pupil Achievement Data System (CALPADS); the data system is currently under development and is scheduled to be fully implemented by fall 2009.

⁵ The California Department of Education's "ninth grade to graduate rate" was calculated by dividing the number of high school graduates in 2006-07 by grade 9 enrollment in 2003-04.

⁶ Approximately 11% of students completed or withdrew from school for other reasons and are not considered graduates or dropouts. This includes students who transferred to a private school, left the state, or took the General Educational Development Test to earn a California High School Equivalency Certificate. All students, whether they graduated, withdrew from, or completed school, are assigned one of 28 "withdrawal codes."

“...among the approximately 40,000 first-time freshmen admitted annually to the CSU system—the largest university system in the country—more than 60% require remedial coursework in English, mathematics, or both.”

Of the students who are admitted to a public 4-year college, many must take remedial coursework in English and mathematics. For example, among the approximately 40,000 first-time freshmen admitted annually to the CSU system—the largest university system in the country—more than 60% require remedial coursework in English, mathematics, or both (CSU, 2008a). To address the large numbers of students requiring remedial instruction, CSU has been collaborating with CDE and the SBE on the Early Assessment Program (EAP). Through the EAP, college-bound high school students can take additional items on the 11th-grade English and mathematics CSTs, as well as a writing sample on the English CST, to determine whether they are prepared for university-level coursework. Students who meet CSU expectations are exempt from additional CSU placement tests; those who do not may receive extra support during their senior year to prepare for college. In addition to early testing and supports during the 12th grade, the program provides professional development workshops for high school English and mathematics teachers.⁷ The most recent EAP test results from 2007 indicated that just 12% of 11th-grade students who took the EAP test in mathematics were deemed “ready for college.” In English, the figure was 16% (CSU, 2007).

The bottom line of all this achievement data is simple: despite some progress across subject areas and different subpopulations, many California students are not achieving at levels required to be prepared for postsecondary education and the world of work. Further improvements in achievement will require improvements in the system of schooling and, most importantly, in the strength of the teacher workforce. In the next section, we review current policy efforts to effect such improvements.

UPDATE ON EFFORTS TO STRENGTHEN THE TEACHING PROFESSION

Because of the serious budget constraints that policymakers faced, few education bills were considered during the 2007-08 legislative session that either called for any major reforms or required new funding. The few teacher-related bills that did pass build on previous efforts to streamline credentialing for prospective teachers, allow districts to provide incentives for mathematics and science teachers, and expand professional development. These include a teacher workforce bill authored by Senator Scott (Senate Bill [SB] 1186, Chapter 518, Statutes of 2008); a Career Technical Education (CTE) credentialing bill authored by Senator Scott (SB 1104, Chapter 576, Statutes of 2008); a teacher compensation bill authored by Senator Romero (SB 1660, Chapter 276, Statutes of 2008); and a professional development bill authored by Assembly member Solorio (Assembly Bill [AB] 2391, Chapter 239, Statutes of 2008). We discuss these below and throughout the report.

⁷ See http://www.calstate.edu/eap/support_hs_teachers.shtml for a description of the professional development offerings available through the EAP.

SB 1186 (Scott). This bill complements legislation passed in 2006 by further streamlining teacher credentialing and making it easier for prospective teachers to enter the profession. It adds to the list of teacher applicants exempt from taking the basic skills test required for the teaching credential, including applicants for an eminence credential and applicants who achieve scores on the CSU Early Assessment Program tests, SAT Reasoning Test, or enhanced ACT English and Mathematics tests that are sufficient to waive the English and mathematics placement tests administered by CSU. The bill also clarifies the circumstances under which a school district may fill a vacant position with a noncredentialed teacher and makes modifications to the intern program by including special education as a shortage area. Finally, the bill stipulates that districts prioritize mentor support offered through the Certificated Staff Mentoring Program to interns over novice teachers participating in induction programs. Thus, the bill makes clearer that mentor support should focus more on individuals currently participating in preparation programs, ensuring that mentor teachers provide support first to interns participating in alternative certification programs, then to novice teachers participating in an induction program.

SB 1104 (Scott). The bill implements several recommendations of the CTE advisory committee to the California Commission of Teacher Credentialing (CCTC) to streamline and simplify CTE credential requirements to make it easier for industry professionals to become CTE teachers. Specifically, the bill reduces the experience requirement for the preliminary CTE credential from 5 years to 3 years and provides that the preliminary CTE credential is to be valid for 3 years. The bill also revises the requirements to receive the preliminary and professional clear CTE credentials.

SB 1660 (Romero). The bill allows districts (with mutual agreement from the local teacher bargaining unit) to use funds from the Professional Development Block Grant to compensate new and existing mathematics and science teachers in schools ranked in the lowest three deciles on the Academic Performance Index (API) in a separate manner from the uniform allowances for years of training and experience. The legislation strongly encourages districts and bargaining units to collaborate to develop incentives that recognize professional experience and teaching in areas of greatest need. Proponents of the bill argued that differentiated pay of this type is especially necessary for mathematics and science teachers because of the more competitive salaries in other fields for which potential teacher candidates with mathematics or science backgrounds are qualified.

AB 2391 (Solorio). The bill broadens the topic areas for follow-up training required as part of the Mathematics and Reading Professional Development Program (MRPDP) to include data analysis and use of data to improve instruction and student outcomes. Teachers can fulfill 40 hours of the 80-hour follow-up training in areas including data analysis, alignment of assessment and instruction, implication of data analysis and effect on increasing pupil achievement, impact on pupil success through diagnostic teaching, differentiating instruction through pacing and complexity, grouping as an aid to instruction, and statewide and local data management systems. Teachers must fulfill the initial 40 hours of MRPDP training before becoming eligible for the expanded data analysis

“...despite some progress across subject areas and different subpopulations, many California students are not achieving at levels required to be prepared for postsecondary education and the world of work.”

“...new laws continue the state’s efforts to reduce barriers to entry into the profession, while strengthening the supports available for new and veteran teachers.”

training. The intent of the legislation is to make follow-up training more relevant, and therefore more appealing to teachers, and to support teachers in becoming more comfortable with using data to drive instructional decisions.

Together, these new laws continue the state’s efforts to reduce barriers to entry into the profession, while strengthening the supports available for new and veteran teachers. The legislation also targets CTE, mathematics, and science teachers—teachers who are particularly critical in the state’s efforts to prepare a more skilled and technical workforce that can meet the demands of the 21st-century global economy.

In addition, implementation of the provisions of three key teacher-related bills signed in 2006 continues: the omnibus teacher workforce bill authored by Senator Scott (SB 1209, Chapter 517, Statutes of 2006); the Quality Education Investment Act authored by Senator Torlakson (SB 1133, Chapter 751, Statutes of 2006); and a teacher data system bill authored by Senator Simitian (SB 1614, Chapter 840, Statutes of 2006). We highlight the key provisions below and discuss their implementation in subsequent chapters.

SB 1209 (Scott). This teacher workforce bill streamlined credentialing requirements by allowing alternatives to the basic skills test required for a teaching credential and made it easier for out-of-state teachers to earn a credential in California. The bill also required a state-approved Teaching Performance Assessment (TPA) to be included in all preparation programs by 2008. It created the Certificated Staff Mentoring Program (CertSMP) to provide additional mentoring support for intern and novice teachers through financial incentives for veteran teachers who assist beginning teachers in low-performing schools, and it offered incentive funding to districts to strengthen intern preparation and distribution. The legislation established regional Personnel Management Assistance Teams (PMATs) to support districts in teacher recruitment and hiring. It also removed the 150 hours of “professional growth” required for renewing the professional clear credential, instead encouraging teachers to engage in more individualized programs of professional growth.

SB 1133 (Torlakson). SB 1133 established the Quality Education Investment Act (QEIA), which implemented a settlement agreement between the California Teachers Association and Governor Schwarzenegger. QEIA provides \$2.9 billion to K-12 education over a 7-year period for low-performing schools to reduce class size and improve working conditions for teachers. The legislation required that all teachers in funded schools be highly qualified under the No Child Left Behind Act of 2001 (NCLB) and that the average years of teaching experience in a funded school meet or exceed the average years of teaching experience among all teachers at the same type of school (e.g., elementary, middle, high) in the school district. The bill also required funded schools to develop a coherent plan for the professional development of teachers and administrators and required teachers to complete an average of 40 hours of professional development for every year they are assigned to a QEIA-funded school.

SB 1614 (Simitian). SB 1614 established the California Longitudinal Teacher Integrated Data Education System. CALTIDES will integrate data collected by the CCTC, the California Department of Education, and local educational agencies. CALTIDES will serve as a central repository of information regarding the teacher workforce that can be used to develop and review state policy and identify workforce trends and future needs. The system also will automate teacher assignment monitoring requirements under state and federal law. The data collected through CALTIDES cannot be used for purposes related to pay, promotion, sanction, or personnel evaluation.

The state has invested in programs and policies to improve the quality of the workforce and to ensure a more equitable distribution of fully prepared teachers. In the remainder of the report, we discuss the status of California's teacher workforce, including teacher demand, distribution, and supply, and we assess the impact of recent initiatives to strengthen the teacher development system.

OVERVIEW OF THE REPORT

In Chapter 2, we examine overall trends in the teacher workforce and discuss the demand for teachers, the distribution of underprepared teachers, and the implementation of a statewide data system to improve the quality and accuracy of data on the teacher workforce. Chapter 3 focuses on teacher preparation and support, highlighting state programs that provide induction support for new teachers and professional development for the workforce as a whole. Chapter 4 takes an in-depth look at the challenges the state faces in preparing all students for work, civic life, and postsecondary education in the 21st century and examines the implications for the teacher workforce of recent efforts to improve secondary education and mathematics and science education. Chapter 5 summarizes the progress the state has made in strengthening the teacher workforce and remaining challenges. Chapter 6 provides the Center's recommendations to policymakers and education leaders for future action. Chapter 7 previews our data collection activities for 2009.

2. THE CURRENT TEACHER WORKFORCE

Since 2000-01, there has been a concerted effort across California to reduce the large numbers of underprepared teachers in the state's teacher workforce. The state has made substantial progress over the last 7 years, reducing the total number of underprepared teachers from more than 42,000 to fewer than 15,500. Still, disproportionate percentages of underprepared teachers remain in high-need areas. Currently, additional efforts are needed to reduce the inequity in the percentages of adequately prepared teachers in certain regions of the state (such as many inland counties), in low-performing schools, and in specific authorizations (including secondary and special education credentials). Attracting teachers to these high-need areas has proven challenging, and newly implemented state programs designed specifically for hiring and retaining teachers in these areas have not been in place long enough to measure their impact. Additionally, this year's budget shortfalls and broader economic issues may affect the teacher workforce in unanticipated ways. The impact of these factors is difficult to gauge in the absence of a statewide data system in place to track teacher movement.

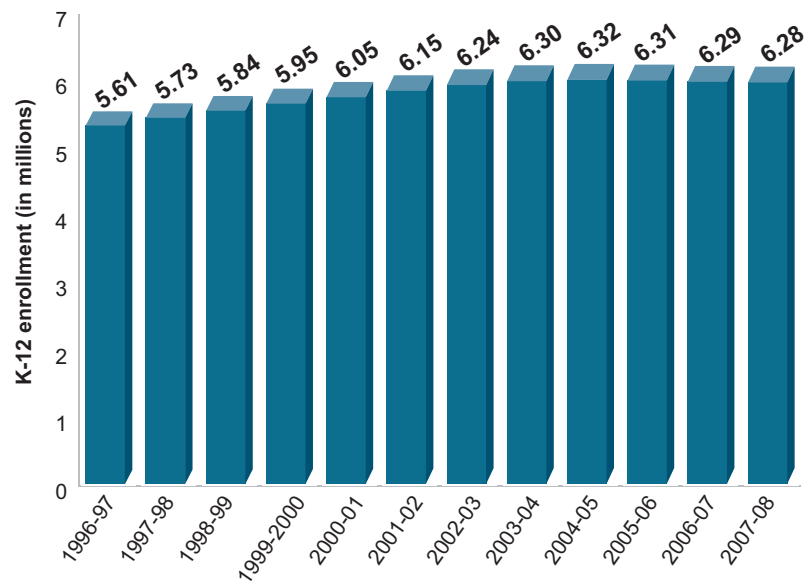
In this chapter, we examine the trends in the current teacher workforce, including the challenges that the state still faces to staff all classrooms with fully prepared teachers. We first discuss statewide trends—including student enrollment and teacher retirement—and the implications of this year's budget uncertainty for district-level staffing decisions. We then discuss teacher distribution, examining data on teacher preparedness and identifying high-need areas that continue to be staffed by disproportionate percentages of underprepared teachers. Finally, we discuss the status of state programs designed to ensure that all students are taught by fully prepared teachers, and we examine the future capacity of California's teacher data system to track and respond to trends in the demand for teachers.

TRENDS IN THE CALIFORNIA TEACHER WORKFORCE

The size of the California teacher workforce has increased gradually over the past few years, following the more rapid period of growth earlier in the decade. In this section, we examine trends that influence the size of the teacher workforce, including student enrollment and teacher retirement, and assess the impact of this year's state budget crisis on districts' staffing decisions.

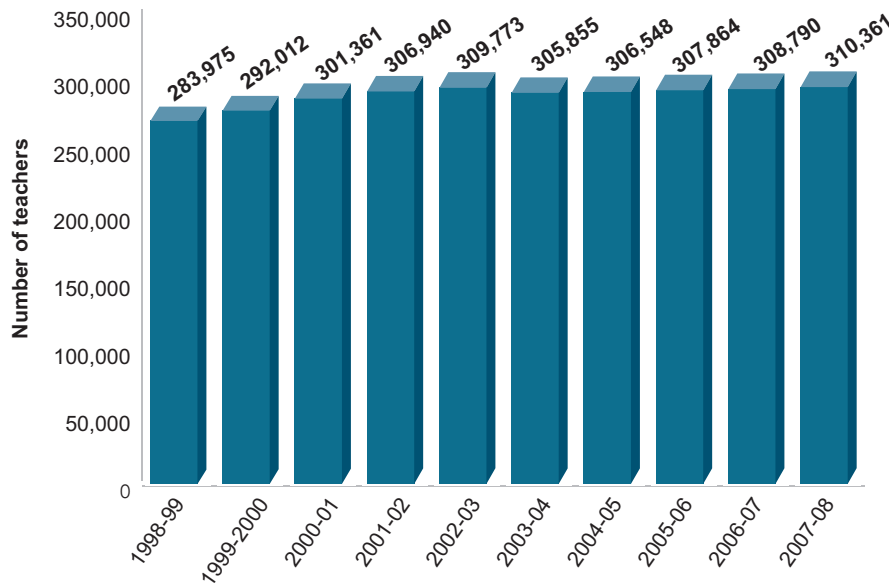
Decline in student enrollment has not coincided with a decline in the teacher workforce.

Student enrollment is a central factor that influences the demand for teachers. After significant growth during the late 1990s and early 2000s, K-12 public student enrollment in California has experienced a slight decline in recent years (see Exhibit 2.1). Between 2004-05 and 2005-06, the state lost approximately 9,700 students. That decline continued over the next 2 years, with a drop of 25,000 students between 2005-06 and 2006-07 and a drop of an additional 11,000 students between 2006-07 and 2007-08. Since 2004-05, enrollment has declined by more than 46,600 students statewide.

Exhibit 2.1 Total K-12 Enrollment, 1996-97 to 2007-08

See Appendix B for source and technical information.

Although statewide student enrollment has been declining since 2004-05, the teacher workforce in California has grown slightly over this same period. After a small drop of approximately 3,900 teachers in 2003-04, the workforce grew by 1.5% to just over 310,000 teachers in 2007-08 (see Exhibit 2.2). This slight growth is a dramatic shift from the frenetic increases of the late 1990s and early 2000s, when the teacher workforce grew by nearly 25% between 1996-97 and 2002-03 (data not shown) in response to the implementation of the state's Class Size Reduction program and increasing student enrollment.

Exhibit 2.2 Number of K-12 Teachers in the California Workforce, 1998-99 to 2007-08

See Appendix B for source and technical information.

Because the teacher workforce has continued to grow slightly while schools have experienced a slight decline in student enrollment, the average K-12 class size statewide has decreased by more than 2 students, from 27.3 students per class in 2004-05 to 25.2 students per class in 2007-08 (Ed-Data, 2008a).⁸ Although averages mask differences in class size trends among grade levels, at least one grade level or core subject at the elementary, middle, and high school levels experienced a drop in average class size between 2006-07 and 2007-08, and no grade levels or core subject areas experienced an increase in average class size during this same period.

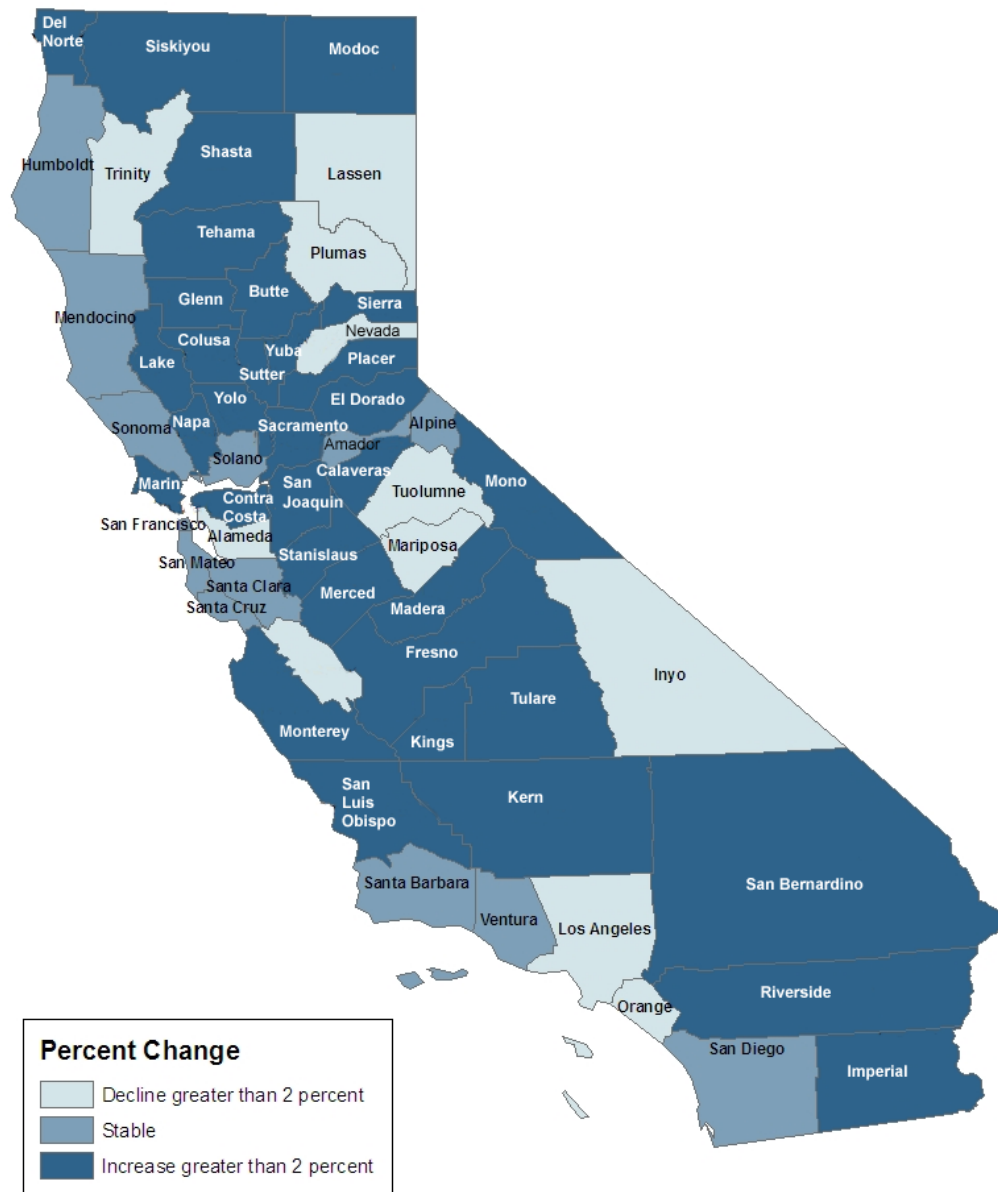
The decrease in average class size suggests that, collectively, districts across the state made decisions over the past few years not to cut teaching staff even in the face of declining enrollments. One official who works closely with districts suggested that local leaders are doing everything they can to hold on to teachers because of the intense accountability pressures to improve student outcomes. Districts also may have anticipated renewed student enrollment growth, discussed in the next section.

Future student enrollment growth is projected in inland counties and in the elementary grades.

The California Department of Finance (DOF) is projecting that over the ten-year period from 2007 through 2017, inland counties, as well as a few central and northern coastal counties, will experience student enrollment growth (see Exhibit 2.3). Riverside County is projected to have the largest increase in student enrollment in the next decade (180,000 additional students). Kern and San Bernardino counties are expected to post increases of more than 47,000 students each by 2017. Two additional Central Valley counties, Sacramento and Fresno, are also expected to experience large enrollment growth. Much of this enrollment growth in the inland counties will be counterbalanced by projected declining or stable enrollment in the state's five most populous counties: Los Angeles, Orange, San Diego, Santa Clara, and Alameda. Student enrollment in Los Angeles County alone is projected to shrink by 13%, or approximately 221,100 students (California Department of Finance, 2008).

“...enrollment growth in the inland counties will be counterbalanced by projected declining or stable enrollment in the state's five most populous counties...”

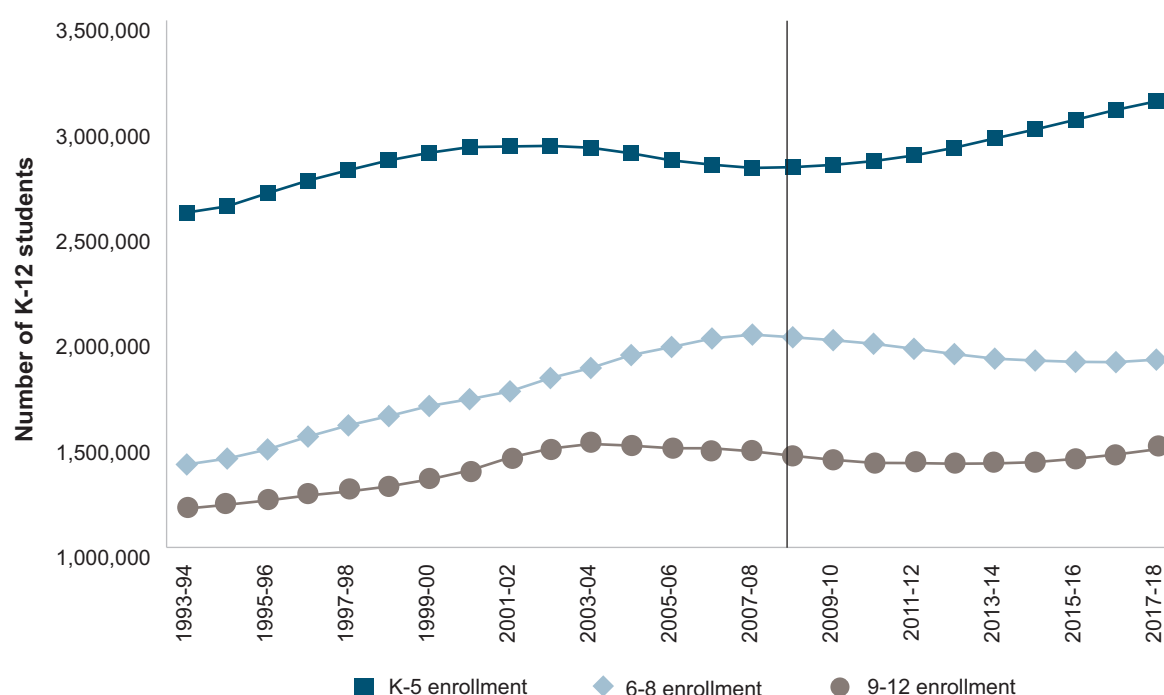
⁸ Average class size ranges from a low of 19.3 in grade 2 to a high of 29.1 in grade 6.

Exhibit 2.3 California Public K-12 Graded Enrollment Change, 2007-17

Source: California Department of Finance (2008).

Although most counties are projected to experience student enrollment growth over the next decade, that growth is not expected to occur across all grade levels. DOF projections suggest that kindergarten through grade 5 will experience the largest enrollment growth over the next decade, with an increase of more than 315,000 students, beginning in 2008-09. Enrollment in grades 6 through 8 is projected to decline by approximately 37,600 students between 2008-09 and 2012-13 before beginning to increase steadily until 2017-18. These middle grades are expected to add 68,000 students between 2013-14 and 2017-18. The high school student population is projected to contract by approximately 118,000 students between 2008-09 and 2016-17 before entering a new era of enrollment growth beginning in 2017-18 (see Exhibit 2.4).

Exhibit 2.4 Actual and Projected K-12 Enrollment, 1993-94 to 2017-18



Source: California Department of Finance (2008).

Note: Actual enrollment from 1993-94 to 2007-2008. Project enrollment from 2008-09 to 2017-18.

DOF projections take into account trend data, including county migration and population estimates. However, it is difficult for projections to take into account the effects of future economic events or policy changes. For example, the extent to which the current economic crisis will affect public school enrollment across the state is unclear. It is possible that in some of the fastest-growing counties where home values have depreciated rapidly in 2008, families will be hit hard by the economic crisis, forcing some to leave the state in search of more affordable regions of the country. Yet, falling home prices in these same counties may make housing more affordable for other families. We will simply need to track closely the impact of the economic crisis on student enrollment trends

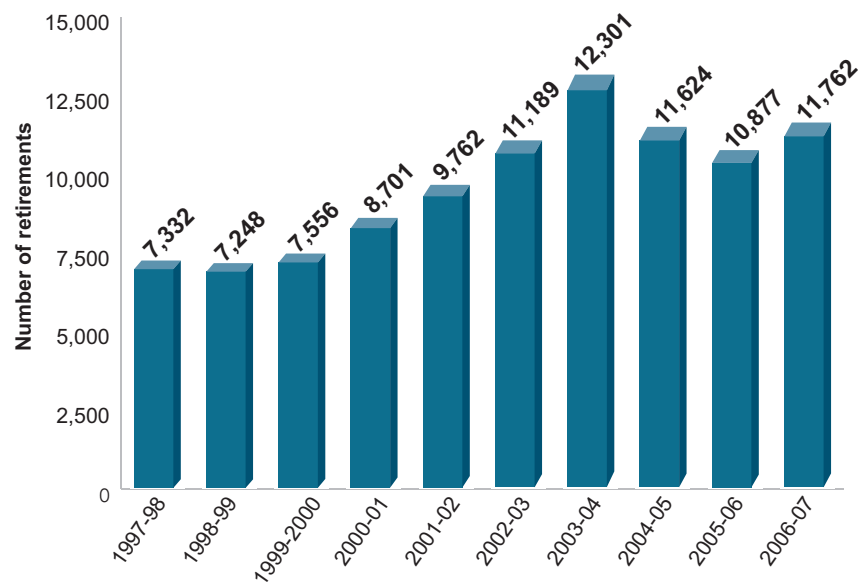
“...DOF projections suggest that kindergarten through grade 5 will experience the largest enrollment growth over the next decade...”

to better understand future teacher workforce needs. Likewise, teacher retirement trends are also important to consider when estimating future teacher workforce needs and are discussed in the next section.

Retirements are at a historically high level, and projected retirements are expected to have the most impact on several counties in the northern half of the state.

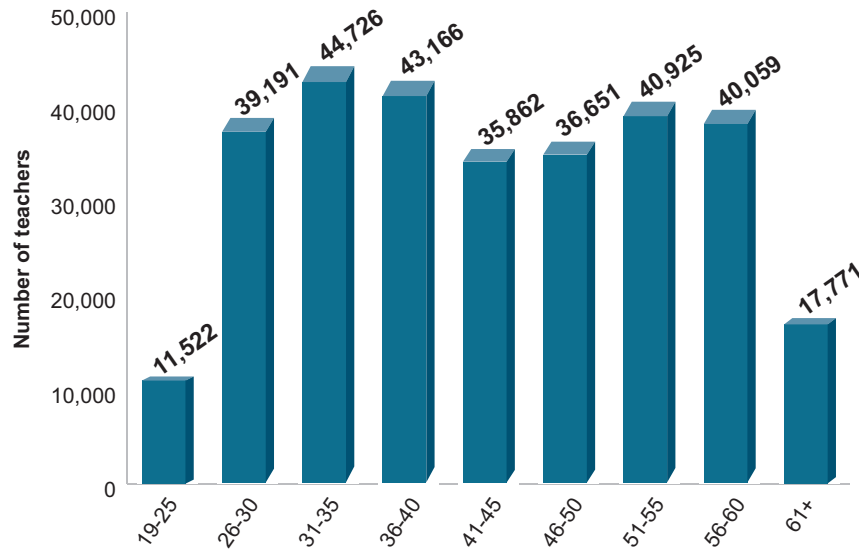
Retirements increased rapidly during the late 1990s and early 2000s before declining two years in a row. In 2006-07, the number of retirements rose by roughly 900 to 11,762, the second largest number of retirements in the past 10 years (see Exhibit 2.5).⁹ More than 17,000 individuals reached the average retirement age of 61, and more than 40,000 will reach that age within the next 5 years (see Exhibit 2.6).

Exhibit 2.5 Number of California State Teachers' Retirement System (CalSTRS) Membership Retirements, 1997-98 to 2006-07



See Appendix B for source and technical information.

⁹ The retirement numbers come from the California State Teachers' Retirement System (CalSTRS), which includes administrators, pupil services staff, pre-K teachers, and community college faculty, as well as K-12 teachers.

Exhibit 2.6 Age Distribution of K-12 Public School Teachers, 2007-08

See Appendix B for source and technical information.

Like student enrollment trends, we would expect the number of teacher retirees and the age of the teacher workforce to vary by county. However, the current data system does not allow us to look at this variation. Understanding that teacher labor markets are regional rather than statewide, the Regional Educational Laboratory (REL) West at WestEd used an estimating technique to determine the number of K-12 teacher retirements by county. Researchers projected that counties in the northernmost part of the state, Sacramento County, and a string of counties east and south of Sacramento should expect to lose between 41% and 59% of their teachers between 2005-06 and 2015-16 to retirement (White & Fong, 2008).

Investigating trends in student enrollment, class size, and teacher retirements is crucial for understanding how these factors affect regions of the state differently and, as a result, the types of policies that would effectively address regional staffing needs. Data on the number of teachers who leave every year (attrition) and the number of teachers who return to teaching each year (reentrants) are also crucial to our understanding of and support for regional teacher labor markets. Unfortunately, currently available teacher workforce data do not allow for calculations of attrition and reentry rates for the state as a whole or by counties, districts, or schools. The *Sacramento Bee* newspaper recently reported that 26,000 teachers, or 14% of the CalSTRS membership, returned to work in schools or districts in 2007-08 (Nix, 2008). There is no systematic way to know whether these teachers are filling classroom assignments or are working in other capacities, such as administering tests or substitute teaching. The new teacher data system described at the end of this chapter will allow for calculations of both attrition and reentries through the use of unique teacher identifiers.

The state and district budget processes also have an impact on the teacher workforce, as districts must make decisions about staffing before the state budget is passed. We look at these issues next.

“The budget impasse of 2008 turned out to be the longest in the state’s history and highlighted the tension between state and district budgeting processes.”

The state's budget process creates uncertainty for districts in determining staffing levels.

The state and district budgeting processes begin early in the calendar year, but districts must make important budget decisions, including teacher staffing decisions, on the basis of projected revenues rather than final, adopted revenue amounts. Proposition 98 attempted to address the uncertainty of building budgets based on projected future district revenues by guaranteeing that districts receive at least what they received on a per student basis the previous year; however, this guarantee can be suspended and has been suspended in the past.¹⁰ Districts began developing their 2008-09 budgets while anticipating a protracted legislative battle over the adoption of a final budget.

The budget impasse of 2008 turned out to be the longest in the state's history and highlighted the tension between state and district budgeting processes. The budget process for the state and districts begins in January, when the Governor submits a proposed budget to the legislature and districts begin compiling enrollment and staffing projections. After January, districts are on a more accelerated timeline than the state to develop and pass a budget. By March, districts must make preliminary decisions about the staffing levels their budgets can support. By March 15, districts with preliminary budgets that require teacher layoffs must notify affected teachers. In May, the Governor submits a second draft budget proposal (the May Revision), but districts must make final staffing decisions at this time and issue final layoff notices by May 15. The constitutional deadline for a final state budget is June 15, but, as was the case in 2008, this constitutional deadline is often ignored. Districts, however, do not have the flexibility to disregard their timelines. Even without a final state budget, districts are required to submit their final budgets to county offices of education for approval by July 1 (see Exhibit 2.7).

Exhibit 2.7 State and District Budget Processes

	State Budget Process	District Budget Process
January	Governor's proposed budget is submitted to the legislature.	Districts compile enrollment and staffing projections and develop budgets for the following school year.
March		By March 15, districts use preliminary budget to determine projected staffing needs and are required to send preliminary teacher layoff notices.
May	Governor submits May Revision of the state budget.	By May 15, districts are required to make final teacher staffing decisions based on preliminary budget and send all final teacher layoff notices.
June	June 15 is the constitutional deadline for the legislature to pass a budget.	
July		By July 1, districts file final, adopted budgets with county offices of education for approval.
August		Between July 1 and August 15, districts have another opportunity to reduce teaching staff if state budget provides a cost of living adjustment (COLA) of less than 2%. This option is available only if there is an approved state budget prior to August 15.

Source: Modified from EdSource Budget Calendar (see http://www.edsource.org/iss_fin_bud_calendar.html).

¹⁰ This guaranteed amount is adjusted for changes in enrollment and per capita personal income. See http://www.edsource.org/pub_prop98.html for more information.

In 2008, some districts responded to the uncertainty of the state's budget impasse with cuts to the workforce.

To develop their 2008-09 budgets, districts relied on conservative teacher staffing projections based on initial estimates of the state deficit. According to the California Teachers Association, approximately 14,000 layoff notices were distributed at the initial March 15 notification deadline (Myslinski, 2008). Many layoff notices were ultimately rescinded, but some districts—including Elk Grove, the state's fifth largest district—followed through with cuts to teaching positions (CDE, 2008g; Rosenhall, 2008). The elimination of nonteaching staff positions was also a strategy districts used to address projected budget shortfalls. The CDE "Budget Crisis Report Card" and supplemental newspaper accounts indicated that at least 5 of the 10 largest districts in the state avoided issuing teacher layoff notices by cutting classified or nonteaching certificated staff positions (Alpert, 2008; CDE, 2008g; Rosenhall, 2008).

Districts that issued preliminary teacher layoff notices may have gained some flexibility in dealing with tight budgets and planning for worst-case scenarios, but this strategy also may have undermined teacher morale. Although many districts rescinded many to most of their layoff notices, media from these districts' communities reported that this strategy left many teachers with concerns about job security and created a great deal of negative attention from parents and community members (Alpert, 2008; CDE, 2008g; Magee, 2008; Rosenhall, 2008). In fact, many concerned teachers reportedly left California to teach in other states because of the uncertain climate created by the budget crisis. The Associated Press and the Los Angeles Times issued multiple accounts of experienced teachers voluntarily leaving positions in California to teach elsewhere, as well as reports of new teachers leaving the state or the country after completing in-state training programs to look for teaching jobs outside of the state (Hoffman, 2008; Mehta, 2008; Mehta & Song, 2008). Exhibit 2.8 describes several efforts to recruit California teachers to other states. Given that open teaching positions remain in California—particularly in certain subject areas, schools, and geographic regions—the fact that teachers have left California rather than accept open positions in particularly hard-to-staff positions underscores the difficulty of recruiting for these teaching positions.

"...many concerned teachers reportedly left California to teach in other states because of the uncertain climate created by the budget crisis."

Exhibit 2.8 Out-of-State Recruitment of California Teachers

With other states currently experiencing a heightened demand for teachers, the budget-related uncertainty in California appears to have made it an attractive place to recruit. For example, the Clark County school district in the Las Vegas area (which is currently experiencing substantial population growth) placed ads with several Los Angeles-area newspapers and radio stations offering \$2,000 relocation incentives for teachers. The Fort Worth Independent School District from Texas erected billboards across California offering teachers \$3,000 relocation incentives and held a 3-day job fair in San Diego in late May 2008. According to the *Los Angeles Times*, districts in at least four other states—Arizona, Hawaii, Virginia, and Kansas—have also actively and publicly recruited California teachers in the past year (Hoffman, 2008; Mehta & Song, 2008).

According to these reports, some teachers who had received layoff notices may have found these recruitment strategies particularly effective, since relocating would allow these teachers to maintain income security without having to wait to find out whether the layoff notices were rescinded. Additionally, both the *Los Angeles Times* and the Associated Press reported that some teachers who had not received layoff notices accepted out-of-state positions simply to alleviate the stress of teaching in positions that did not seem as secure or adequately funded as their out-of-state counterparts.

“Since the high of over 42,000 underprepared teachers (roughly 14% of the overall workforce) in 2000-01, the total dropped to under 15,500 (roughly 5% of the overall workforce) in 2007-08.”

Given the limitations of the state’s current data systems, we are unlikely to understand fully the impact of the budget impasse and the economic crisis on the current teacher workforce.

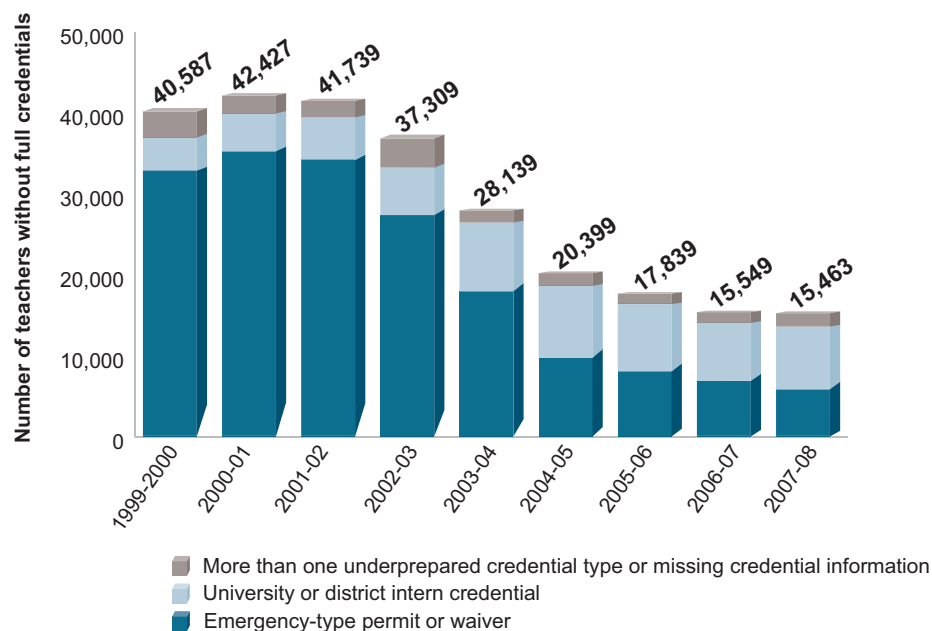
THE PREVALENCE AND DISTRIBUTION OF UNDERPREPARED TEACHERS

Regardless of overall trends in the demand for teachers in the state, districts have not always been able to hire fully credentialed teachers to fill all open positions. In this situation, districts hire underprepared teachers who have yet to complete the requirements for a preliminary credential, including individuals with intern credentials and individuals with emergency-type permits. In this section, we explore the prevalence and distribution of underprepared teachers and discuss the status of programs aimed at correcting inequities.

The overall percentage of underprepared teachers in the workforce continues to decline but appears to be leveling off.

The population of underprepared teachers across the state has been declining since 2001-02. Since the high of over 42,000 underprepared teachers (roughly 14% of the overall workforce) in 2000-01, the total dropped to under 15,500 (roughly 5% of the overall workforce) in 2007-08. This steep decline in the number and overall percentage of underprepared teachers is promising. However, the sharp annual declines between 2001-02 and 2005-06 have slowed, resulting in a decline of fewer than 100 teachers in 2007-08 (see Exhibit 2.9).

Exhibit 2.9 Number of Underprepared Teachers, by Credential Type, 1999-2000 to 2007-08



See Appendix B for source and technical information.

While the size of the population of underprepared teachers appears to be holding steady, its composition continues to change, with a sustained decline in the percentage of underprepared teachers holding emergency-type permits or waivers. In 2007-08, 38% of underprepared teachers reported teaching on emergency-type permits or waivers, compared with as many as 83% of underprepared teachers in 2000-01. The shift away from emergency-type permits and waivers in favor of intern credentials is likely to be due in large part to the state's designation of interns as meeting the definition of "highly qualified" teachers under the federal No Child Left Behind Act of 2001 (NCLB). Even with dramatically fewer emergency-type teachers, districts struggled to employ fully credentialed teachers for all their open positions, employing more than 5,800 emergency-type teachers in 2007-08.

Although the number and percentage of underprepared teachers have declined, these underprepared teachers continue to be maldistributed. The vast majority of underprepared teachers can be found in the state's 10 largest counties in terms of student enrollment, including Los Angeles, San Bernardino, and San Diego. Yet, it is some of the state's smaller counties with high student poverty rates, such as Imperial, Yuba, San Benito, and Kings, that have the highest percentages of underprepared teachers in the state (see Exhibit 2.10).

Exhibit 2.10 Top 10 California Counties, by Number and Percentage of Underprepared Teachers, 2007-08

County	Number of Underprepared Teachers	County	Percent of County's Teachers Who Were Underprepared
Los Angeles	5,582	Imperial	13
San Bernardino	1,144	Yuba	9
San Diego	1,025	San Benito	8
Riverside	930	Kings	8
Santa Clara	754	Monterey	7
Alameda	692	San Joaquin	7
Orange	490	Contra Costa	7
Kern	459	Los Angeles	7
Sacramento	340	Lassen	7
Fresno	319	Merced	7

"In 2007-08, 38% of underprepared teachers reported teaching on emergency-type permits or waivers, compared with as many as 83% of underprepared teachers in 2000-01."

See Appendix B for source and technical information.

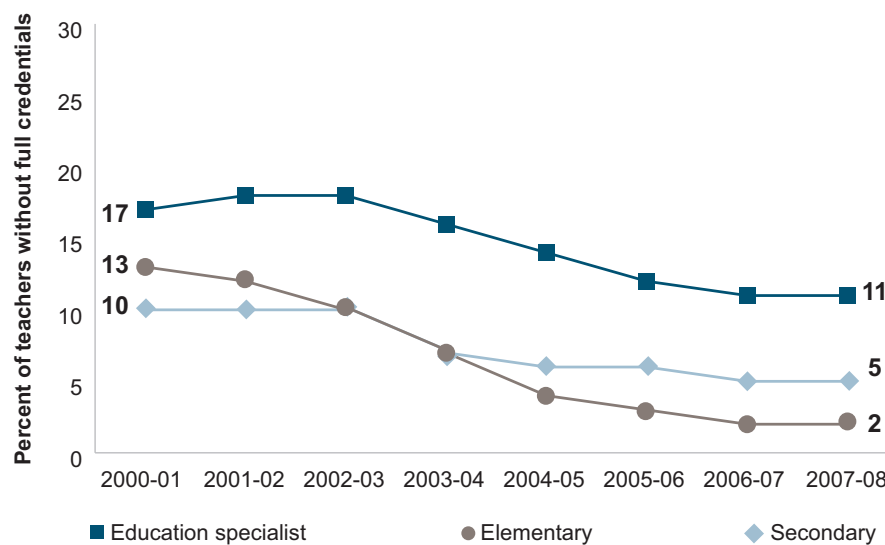
Disproportionate percentages of underprepared teachers are currently found at the secondary level and in special education.

The decline in the number and percentage of underprepared teachers in the workforce has occurred most dramatically at the elementary level. In 2000-01, 13% of teachers

“Five percent of teachers with a secondary authorization and 11% of teachers with a special education authorization were underprepared in 2007-08.”

with an elementary authorization were underprepared, compared with just 2% of these teachers in 2007-08. Since the beginning of the decade, the percentages of underprepared teachers with secondary and special education authorizations have also declined, but not as rapidly as the percentage of underprepared teachers with elementary authorizations. Five percent of teachers with a secondary authorization and 11% of teachers with a special education authorization were underprepared in 2007-08, compared with 10% and 17%, respectively, in 2000-01 (see Exhibit 2.11). Although the percentage of underprepared special education authorizations has declined since 2002-03, schools continue to struggle to hire fully credentialed special education teachers. In 2007-08, approximately 45% of all first- and second-year special education teachers were underprepared (see Exhibit A.3 in Appendix A).

Exhibit 2.11 Percentage of Underprepared Teachers, by Authorization, 2000-01 to 2007-08



See Appendix B for source and technical information.

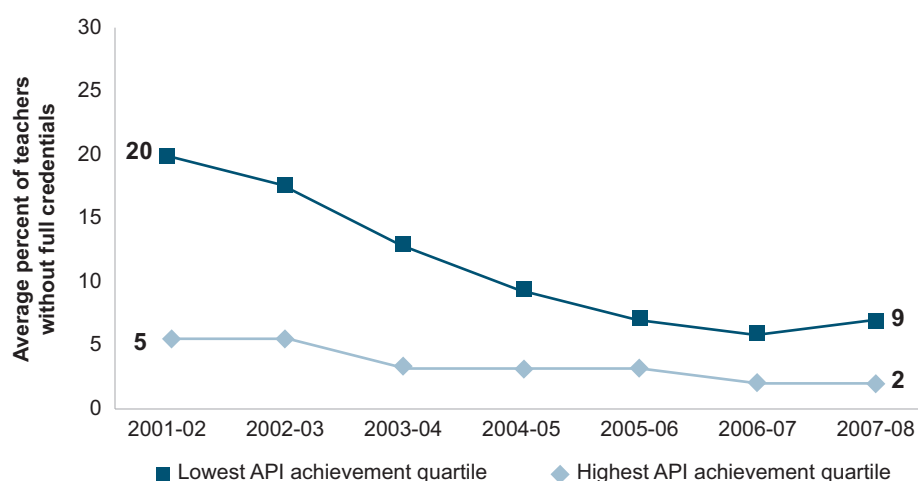
The proportions of underprepared teachers in secondary schools and in special education are of particular concern, given statewide attention to the issues of student disengagement and dropouts, as well as the NCLB requirement to bring special education students up to proficient levels on state standardized tests. Recent initiatives to encourage more students to take Algebra I in the eighth grade and strengthen Career Technical Education programs (addressed in Chapter 4) are just two of many examples of efforts for which underprepared teachers may not be sufficiently trained to support implementation.

The lowest-performing schools continue to have a higher average percentage of underprepared teachers than the highest-performing schools.

Not only are underprepared teachers concentrated in certain regions of the state and in particular authorizations, they are more likely to teach in the lowest-performing schools (those in the lowest quartile of the Academic Performance Index [API]). Since 2001-02, the average percentage of underprepared teachers in the lowest-performing schools has decreased substantially. In 2001-02, on average, 20% of teachers in the lowest-performing schools were underprepared; by 2007-08, that average percentage of underprepared

teachers was down to 9%.¹¹ While the overall reduction is laudable, the average percentage of underprepared teachers in the lowest-performing schools remains more than four times as high as that in the state's highest-performing schools (those in the highest API quartile; see Exhibit 2.12). This maldistribution means that a sixth-grade student in 2008-09 who attended a low-performing school from kindergarten through fifth grade had a 52% chance of having had at least one underprepared teacher. In contrast, a sixth-grade student in 2008-09 who attended a high-performing school from kindergarten through fifth grade had a 17% chance of having had at least one underprepared teacher.¹²

Exhibit 2.12 Average Percentage of Underprepared Teachers in Schools in the Highest and Lowest API Achievement Quartiles, 2001-02 to 2007-08



See Appendix B for source and technical information.

Not only do the lowest-performing schools have the largest proportion of underprepared teachers, but when underprepared teachers are combined with large numbers of novice teachers, these schools may face significant staffing challenges.¹³ For example, schools with large concentrations of underprepared and novice teachers may have less professional expertise and fewer experienced teachers to serve as mentors and support providers. That is, they may have too many teachers who need extra support and too few teachers available to provide that support. In addition, without a stable teaching staff, these schools must constantly focus on and invest in hiring and recruiting new teachers. In 2007-08, 19% of the teachers in the lowest-performing schools were underprepared and/or novice, nearly double the proportion (10%) in the highest-performing schools (see Exhibit 2.13). This difference has remained relatively constant over the last three years.

“In 2007-08, 19% of the teachers in the lowest-performing schools were underprepared and/or novice, nearly double the proportion (10%) in the highest-performing schools...”

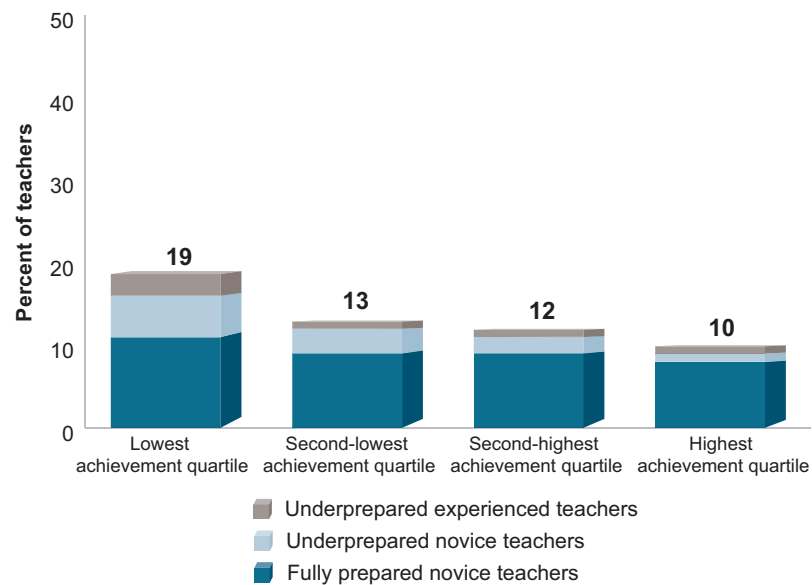
¹¹ In 2000-01, approximately 24% of all schools in the state had faculties in which 20% or more of the teaching staff were underprepared. By 2007-08, the percentage of schools in which 20% or more of the teachers were underprepared had dropped to 4% of all schools in the state.

¹² This odds analysis can be applied only to sixth-grade students who attend schools in the same low- or high-performing category throughout their elementary years (kindergarten through fifth grade). For example, this analysis does not apply sixth-grade students who are enrolled in low-performing schools in 2008-09 but who had attended other schools in previous years that were not low performing. This analysis also does not apply to students who were not enrolled in California public schools from kindergarten through fifth grade.

¹³ Novice teachers are defined as teachers in their first or second year of teaching. In 2007-08, there were 35,282 novice K-12 teachers, of whom approximately 24% were underprepared (see Exhibit A.4 in Appendix A).

“Approximately one-third of teachers in schools with the lowest passage rates on the CAHSEE are underprepared and/or novice.”

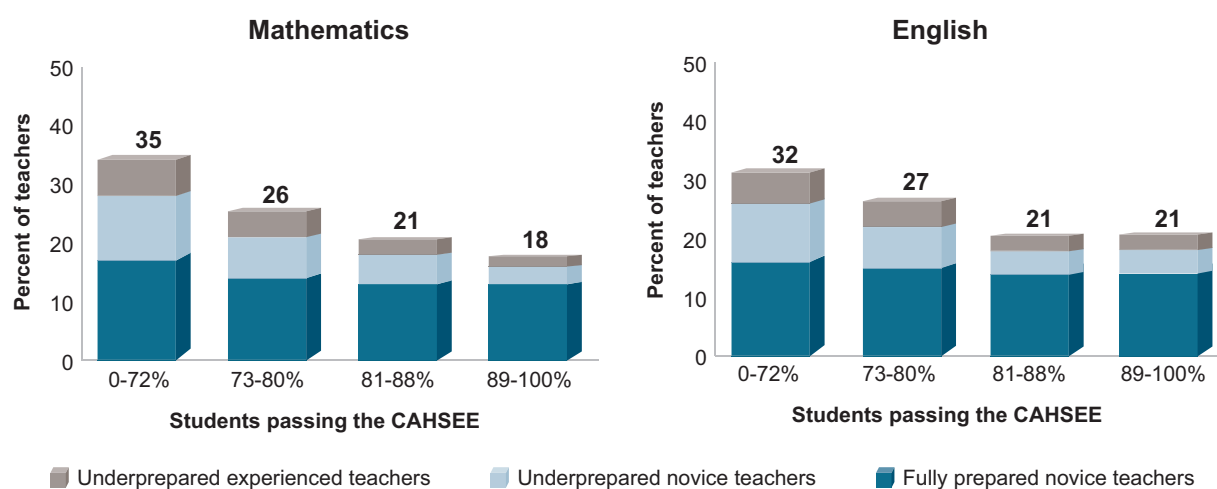
Exhibit 2.13 Percentage of Underprepared and Novice Teachers, by API Achievement Quartile, 2007-08



See Appendix B for source and technical information.

These same patterns hold when we examine the distribution of underprepared and novice teachers by passage rates on the California High School Exit Exam (CAHSEE). As we described in Chapter 1, CAHSEE is now a high school graduation requirement for students, yet approximately 10% of the Class of 2008 had not passed the exam by the end of their senior year. In fact, the data suggest that students who need the best and most effective teachers to help master the content needed to pass the exit exam are the most likely to be taught by teachers who lack a full credential or are new to the profession. Approximately one-third of teachers in schools with the lowest passage rates on the CAHSEE are underprepared and/or novice. In contrast, in schools with the highest passage rates, approximately one-fifth of teachers are underprepared and/or novice—a figure that, while also too high, is substantially lower than that in the schools with the lowest passage rates (Exhibit 2.14).

Exhibit 2.14 Percentage of Underprepared and Novice Teachers, by School-Level Percentage of 10th-Grade Students Passing the CAHSEE, 2007-08



See Appendix B for source and technical information.

As is the case with high- and low-performing schools, schools with high minority populations and schools with high poverty levels have higher average percentages of underprepared teachers than low-minority, low-poverty schools (see Appendix A, Exhibits A.6 and A.10). These remaining disparities, which have persisted despite overall progress in reducing underprepared teachers since earlier in the decade, have prompted recent legislation.

Legislation passed in 2006 focused on distributing teachers more evenly in areas of need.

The state has invested in efforts to support the recruitment and hiring of teachers, particularly in the lowest-performing schools. Notable interventions in this area include Personnel Management Assistance Teams (PMATs), various provisions of the Quality Education Investment Act (QEIA) that relate to teacher recruitment and retention, and the Certificated Staff Mentoring Program (CertSMP). Implementation of these programs is just getting started, meaning that the groundwork is being laid but information is not yet available on their efficacy.

In 2006, SB 1209 (Scott) provided \$3 million for the establishment of PMATs to improve district hiring practices and retain qualified personnel in areas of need. PMAT regional centers are located in six county offices of education distributed throughout the state. The PMATs are designed to help support districts and schools with teacher recruitment, placement, professional development, and retention activities. Through March 2008, the PMATs had provided technical assistance to 157 districts, most of which had not met adequate yearly progress (AYP) and highly qualified teacher requirements, according to data from the California Basic Educational Data System (CBEDS). The PMATs also provided 12 districts with more in-depth services focused on identifying and reviewing these districts' personnel management practices (CDE, 2008h). Where

"The state has invested in efforts to support the recruitment and hiring of teachers, particularly in the lowest-performing schools."

needed, the PMATs conducted training for districts on how to enter teacher data into state data systems to reflect teacher qualifications accurately and on how to calculate the equitable distribution of teachers across a district. PMAT personnel expected to serve more than 400 districts in 2008-09. However, funding for the PMATs is uncertain in view of a plan to change the source from state funds to federal Title II funds because of the nature of their work in helping districts to meet Title II requirements.

Technical assistance provided by PMATs to help districts improve the equitable distribution of teachers is particularly important for districts participating in QEIA, a program that targets low-performing schools and requires that teacher experience be equally distributed across schools. SB 1133 (Torlakson), passed in 2006, implemented QEIA, the settlement agreement between the Governor and the California Teachers Association. The settlement agreement provides \$2.9 billion to K-12 education over a 7-year period from 2007-08 through 2013-14 to reduce class size and improve teacher working conditions in low-performing schools (ranked in the first or second API decile in 2005). Eligible schools were nominated by districts in 2006-07. CDE used a lottery process, weighted to account for geography and grade level, to select 488 schools across the state to receive funding on a per student basis. QEIA requires substantial reporting and monitoring efforts to ensure that provisions are being met. Two regional technical assistance centers have been set up (at the Los Angeles and Sacramento county offices of education) to aid implementation.

The provisions of QEIA directly affect schools' and districts' efforts to hire and retain high-quality teachers in areas of need. All teachers in funded schools must be highly qualified under the No Child Left Behind Act of 2001 (NCLB), and the average years of teaching experience in a funded school must meet or exceed the average years of teaching experience among all teachers at the same type of school (e.g., elementary, middle, high) in the school district. In addition, schools are required to develop a coherent plan for the professional development of teachers and administrators, and teachers are required to complete an average of 40 hours of professional development for every year they are assigned to a QEIA-funded school. Class size reduction mandates and the requirement for schools to exceed API growth targets in each of the first 3 years of funding may further affect targeted teacher recruitment and retention efforts.

The 2007-08 academic year was a planning year for QEIA grantees to prepare for the start of monitoring in 2008-09. Individuals working with QEIA districts and schools reported that the planning process has been somewhat challenging for many districts, since district and school staff members are frequently not well-versed in the details of the legislative provisions. CCTC representatives and QEIA technical assistance staff have provided various training sessions to school and district staff members to explain statutory requirements, assist in budgeting, help calculate teacher experience targets to distribute teachers equitably, and alleviate any confusion about other requirements.

Funding for QEIA appears to be relatively stable, with no changes for the 2008-09 school year, and QEIA funding plans that were established in 2006 remain unchanged. Funds are passed to districts to allocate to schools. Depending on current class sizes and the need for additional staff, some schools may spend the majority of funds on salaries, whereas other schools may have more discretionary funds.

Along with PMATs and the provisions of QEIA, the CertSMP established under SB 1209 also may support a more equitable distribution of teachers. The program (discussed in more detail in Chapter 3) provides \$6,000 stipends to veteran teachers to encourage them to work in low-performing schools (schools in API deciles 1-3) for at least 5 years and support new teachers (interns and newly credentialed teachers) during their first years of teaching. In 2006-07, the first year of funding, the program provided stipends to approximately 655 mentor teachers across 160 districts (personal communication with CDE, 2008). Funding for the CertSMP has been stable since the first allocation of \$11.2 million; however, any cuts to the program would result in a proportional cut to the stipend amount.

“Although the new CALTIDES system will be a welcome change from the disconnected teacher information systems of the past, the system has limitations.”

LONGITUDINAL TEACHER DATA SYSTEM

Policymakers’ understanding of and ability to make decisions about the needs of the teacher workforce turn on the quality and accuracy of the available data. Currently, teacher workforce data are collected and maintained by various state and local agencies. Without a robust longitudinal teacher data system, the aforementioned trends in teacher demand and distribution are difficult to explain and project. This situation leaves policymakers with limited information with which to make decisions related to the teacher workforce. In this section, we discuss the state’s effort to build a comprehensive, coherent, and centralized longitudinal teacher workforce data system through the California Longitudinal Teacher Integrated Data Education System (CALTIDES).

CALTIDES is designed to allow for linkages between state databases for more effective reporting and monitoring of the teacher workforce but has not yet been implemented and will have some limitations.

Before 2007-08, information on California’s teacher workforce was collected by numerous state and local agencies, was housed in different data management systems, and could not be integrated. This incoherent system resulted in redundant data collection efforts and did not provide the data needed for effective data-driven decision-making or for state and federal monitoring and compliance activities. In addition, without unique teacher identifiers, the data that were collected could not answer important questions, such as: How many teachers in California leave the profession each year? What are the teacher retention rates for low-API vs. high-API schools?

In an important first step toward a comprehensive, coherent, and centralized longitudinal teacher workforce data system, the legislature passed SB 1614 (Simitian) in 2006, which authorized an integrated teacher data system. Linked longitudinally by a Statewide Educator Identifier (SEID), assigned to each teacher, this system, known as CALTIDES, will maintain teacher credential and authorization data from the California Commission on Teacher Credentialing (CCTC). CALTIDES data can then be linked to teacher assignment data in the California Longitudinal Pupil Achievement Data System (CALPADS).

Although the new CALTIDES system will be a welcome change from the disconnected teacher information systems of the past, the system has limitations. Some stakeholders have expressed concerns about the completeness of the teacher data in CALTIDES, noting that certain teachers will not have identifiers because they do not hold CCTC-issued credentials (e.g., charter school teachers teaching non-core classes). Other stakeholders are concerned that the CALTIDES data will not be comprehensive enough

to allow for rigorous analyses. For example, CALTIDES will include only data that are being collected as part of the state's existing data collection activities, such as CBEDS and the annual Language Census (R30-LC). Without additional data collection requirements, CALTIDES will not include information that is critical to understanding a range of issues, from teacher assignment patterns to teacher attrition. For example, because data collection activities typically occur once per year (e.g., information on teacher assignments is collected in October), no data will be included in CALTIDES that capture information about teachers' spring teaching assignments, when teachers leave the profession during a school year, or the reasons for teacher departures. Still others would like to see CALTIDES include data collected by teacher preparation programs and professional development programs, which are not currently included.

Another limitation is the lack of comprehensive administrator data in CALTIDES. Without even basic information about the roles of school administrators (e.g., principals, assistant principals), CALTIDES data will not allow for any investigation into the relationships between characteristics of school administrators (e.g., years in the principalship) or characteristics of school administrative structures (e.g., number of school administrators in a school) and teacher retention.

One final concern is the accessibility of the newly integrated data. No data will be made publicly available that include the educator identification number (SEID). This number is necessary to conduct important analyses, such as teacher retention and attrition. Researchers may request access to data with SEIDs; however, the procedures for requesting and granting access have yet to be determined, and it is not clear that the departments responsible for granting access will have the capacity to review all requests in a timely manner.

Building a comprehensive, integrated teacher data system for a state as large as California is a monumental task, and, despite its limitations, CALTIDES is a good first step in making that data system a reality. Progress has been made on CALTIDES implementation, but full implementation has been delayed. SEIDs have been distributed to counties for assignment to teachers. As of fall 2008, these SEIDs were required on the teacher data collection forms to facilitate smooth implementation of CALTIDES. Unfortunately, the process of selecting a vendor was delayed until January 2010, pushing the full rollout of CALTIDES to the end of 2011.

CHAPTER SUMMARY

After more than a decade of rapid growth, student enrollment in California's schools and the size of the teacher workforce have stabilized. Enrollment is down slightly, while the number of teachers in the state has grown a bit. Similarly, the proportion of underprepared teachers in the workforce has stabilized at around 15,500, or 5% of all teachers. These statewide patterns, however, mask differences across grade levels, subject areas, and regions. For example, low-performing schools are much more likely than higher-performing schools to have underprepared teachers. Moreover, disproportionate percentages of underprepared teachers are found at the secondary level and in special education. Understanding student enrollment and teacher workforce trends in specific high-need areas is critical to crafting policies that successfully target our state's most pressing teacher workforce needs.

Several statewide programs—including Personnel Management Assistance Teams and certain provisions of the Quality Education Investment Act—focus on recruitment and retention strategies for qualified teachers in these areas of need. Initial efforts are under way, but the effectiveness of these programs cannot be fully evaluated until more time has passed.

The limitations of statewide projections related to teacher demand and distribution underscore the need for a centralized longitudinal teacher data system. CALTIDES is expected to facilitate more accurate and sensitive projections in many of these areas once operational in late 2011, but challenges still remain.

3. PREPARING AND SUPPORTING CALIFORNIA'S TEACHERS

Regardless of shifts in the overall demand for teachers across the state, in certain regions, or in specific content areas, policymakers and local educators need to focus on preparing new teachers and supporting those already in the profession. Yet, enrollment in teacher preparation programs and credential production continue to decline, especially in multiple-subject credential programs that prepare future elementary teachers, while the number of individuals earning teaching credentials through the state's intern program continues to grow. Meanwhile, the state has invested in programs to induct and mentor novice teachers, including the Beginning Teacher Support and Assessment (BTSA) program and the recently created Certificated Staff Mentoring Program (CertSMP). Funding for teacher professional development programs has remained relatively flat over the last few years. Some of these programs offer districts, schools, and teachers some discretion over the use of funding; other programs are targeted to specific subject areas and student populations.

In this chapter, we focus on the state's systems for preparing and supporting teachers to meet the needs of California's schools. We begin with data on the number of candidates enrolled in credential programs and the trends in credentials issued over time. We then discuss the supports that are in place to improve teaching quality throughout a teacher's career, from inducting and mentoring novice teachers to honing the skills of veterans. We discuss what the state, institutions of higher education (IHEs), and local school districts are doing to support and strengthen the quality of teaching and the impact of recent legislation on teacher preparation, induction, and professional development programs.

TEACHER SUPPLY AND PREPARATION

Tomorrow's teacher workforce depends in large part on the supply of newly credentialed teachers, which in turn depends on the number of teacher candidates enrolled in teacher preparation programs. As both enrollment and credential numbers continue to decline, we consider the impact of recent state policies on teacher preparation programs to improve both the quantity and quality of the workforce.

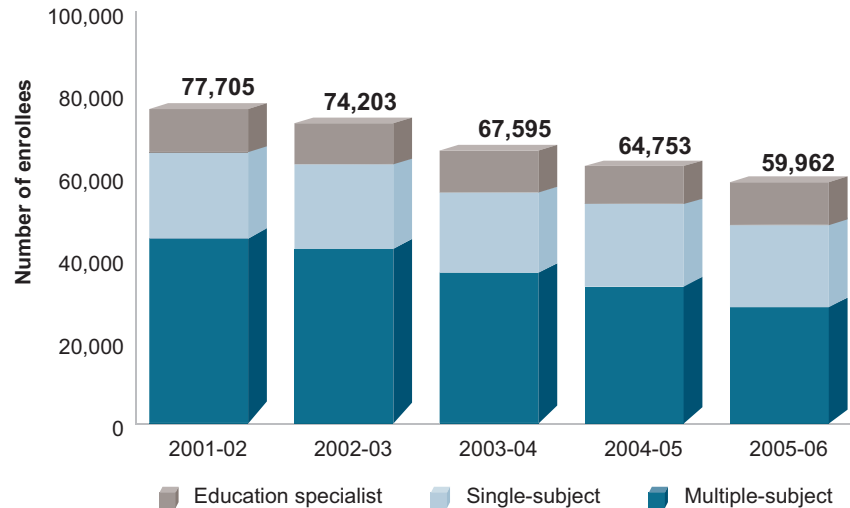
Teacher preparation enrollment and credential numbers continue to decline.

Between 2001-02 and 2005-06 (the most recent years for which data are available), the number of prospective teachers enrolled in teacher preparation programs steadily declined. In 2005-06, fewer than 60,000 candidates were enrolled in teacher preparation programs, down from nearly 78,000 4 years earlier. The decline largely has been a result of decreased enrollment in multiple-subject credential programs; the numbers of candidates enrolled in single-subject and education specialist (i.e., special education) credential programs have remained relatively flat (see Exhibit 3.1).

"In 2005-06, fewer than 60,000 candidates were enrolled in teacher preparation programs, down from nearly 78,000 4 years earlier. "

Exhibit 3.1 Number of Enrollees in Teacher Preparation Programs, 2001-02 to 2005-06

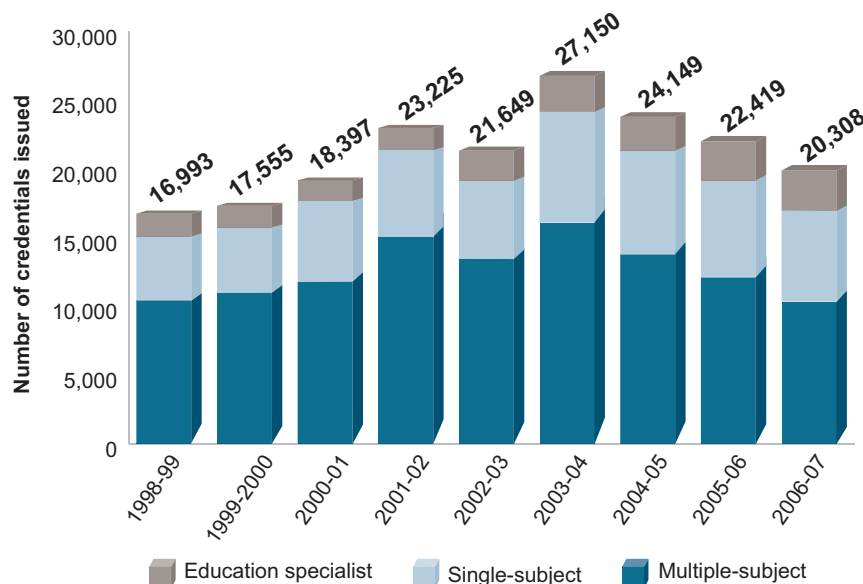
“In 2006-07, IHEs issued 20,308 preliminary credentials—a decline of 25% from what they had issued 3 years earlier, reflecting a drop of nearly 7,000 credentials in that period.”



Note: Figure includes individuals enrolled in district intern programs.
See Appendix B for source and technical information.

The drop in enrollment in teacher preparation programs may be due to a number of factors. Increasing fees and tuition costs over the last few years at the state's 4-year public universities, which prepare a significant number of teachers, may have led some potential students to forgo entry—at least in the short term. Faculty from teacher preparation programs whom we interviewed in fall 2008 mentioned the growth of alternative teacher preparation programs, such as intern programs (described later in this chapter) and online programs, which are less expensive than traditional programs and allow teachers to work toward a credential while teaching. In addition, they noted that cuts to teacher recruitment funding in past years may also have contributed to the decline in enrollment in preparation programs. Alternatively, the drop in enrollment simply may be a rational response on the part of prospective teachers to the decline in teaching positions in the elementary grades as enrollment at that level has dropped. This hypothesis is consistent with the fact that the major decline has been in the number of candidates for the multiple-subject credential.

The number of new preliminary credentials issued, not surprisingly, mirrors the trend in the number of enrollees in preparation programs (Exhibit 3.2). Because of the delay between enrollment in a preparation program and the issuance of the teaching credential, data on credentials lags enrollment data by a couple of years. The number of credentials issued rose for several years, peaking in 2003-04 at 27,150, but has since declined. In 2006-07, IHEs issued 20,308 preliminary credentials—a decline of 25% from what they had issued 3 years earlier, reflecting a drop of nearly 7,000 credentials in that period. As with enrollment in multiple-subject preparation programs, the overall decline in the number of credentials has been driven primarily by a decrease in the number of multiple-subject credentials issued. This continued decline in teacher preparation enrollment and credential production poses a serious concern, especially for certain regions of the state that struggle to attract and hire fully credentialed teachers (described in the preceding chapter).

Exhibit 3.2 Number of New Preliminary Credentials Issued by IHEs, 1998-99 to 2006-07

See Appendix B for source and technical information.

“SB 1209 (Scott), passed in 2006, included several provisions that simplified the process of earning a teaching credential, which may help encourage more individuals to consider entering the profession.”

SB 1209 streamlined the credentialing process and lowered barriers to entry into the profession.

As the numbers of individuals enrolled in teacher preparation programs and the numbers of new credentials issued continue to decline, recent legislation has been enacted to increase the supply of teachers by reducing barriers into the profession. SB 1209 (Scott), passed in 2006, included several provisions that simplified the process of earning a teaching credential, which may help encourage more individuals to consider entering the profession. The legislation streamlined testing requirements for prospective teacher candidates and made it easier for teachers who hold credentials from outside the state to earn a credential in California (see Exhibit 3.3).

Exhibit 3.3 SB 1209: Teacher Preparation Provisions

- Allows substitution of a passing score on the Graduate Record Examination (GRE) General Test, Scholastic Aptitude Test (SAT) Reasoning Test, or ACT Plus Writing test to satisfy the basic skills requirement in lieu of passing the California Basic Educational Skills Test (CBEST).
- Directs the CCTC to modify the California Subject Examinations for Teachers (CSET): Multiple Subjects by July 2007 to include a writing assessment so that the exam can satisfy the basic skills requirement and be used in lieu of the CBEST.
- Directs the CCTC to examine the feasibility of modifying the Reading Instruction Competence Assessment (RICA) and the CSET single-subject exams to reduce the number of exams required of teacher candidates.
- Requires the CCTC to review and make recommendations for expediting special education credentialing.
- Issues credentials to out-of-state teachers who hold a credential in another state and meet basic skills requirements.
- Allows out-of-state English learner (EL) authorization to qualify for EL authorization in California.
- Requires full implementation of the TPA in preparation programs starting July 2008.

To earn a preliminary teaching credential in California, teacher candidates must pass a series of tests to demonstrate basic skills, subject matter knowledge, and teaching ability (see Exhibit 3.4). SB 1209 provided several alternatives to the California Basic Educational Skills Test (CBEST), which tests teachers' basic reading, writing, and mathematics skills; this change may make the credentialing process easier for teacher candidates by providing multiple options for meeting the basic skills requirement. For example, a test for writing has been added to the California Subject Examinations for Teachers (CSET): Multiple Subjects exam; a candidate who passes the new CSET: Multiple Subjects Plus Writing Skills exam no longer has to take the CBEST test to earn a credential (CCTC, 2007a). The revised examination has been offered since May 2007. Similarly, SB 1209 specified that passing scores on the GRE, SAT, and ACT tests could be substituted for the CBEST to meet the basic skills requirement, further expanding candidates' options for meeting this requirement.¹⁴

SB 1209 also required the CCTC to review several exams, including the RICA and CSET single-subject tests, to evaluate the feasibility of reducing the number of exams candidates are required to pass. In April 2007, the CCTC reported on the feasibility of incorporating a reading assessment, currently the Reading Instruction Competence Assessment (RICA), into the TPA. On the basis of public input, the CCTC concluded that the RICA should be maintained as a separate assessment of teachers' skills, knowledge, and ability to teach reading (CCTC, 2007b). SB 1209 also required the CCTC to assess the implications of incorporating an assessment of basic skills in reading, writing, and mathematics into the single-subject CSET exams (CCTC, 2007c). Again, on the basis of public input, the CCTC recommended that the CSET single-subject tests be maintained and not be modified to include an assessment of basic skills.

¹⁴ These options are not available as of November 2008.

Exhibit 3.4 Examinations Required to Earn a Preliminary Credential

Examination	Skills Tested
California Basic Educational Skills Test	<ul style="list-style-type: none"> • Basic reading, mathematics, and writing skills.
California Subject Examinations for Teachers	<ul style="list-style-type: none"> • Subject-specific subject matter content knowledge. • Multiple subjects, single subjects, and preliminary educational technology.
Reading Instruction Competence Assessment	<ul style="list-style-type: none"> • Knowledge, skill, and ability to provide effective reading instruction (for multiple-subject and education specialist credentials only).
Teaching Performance Assessment	<ul style="list-style-type: none"> • Knowledge, skills, and abilities gained through teacher preparation.

In addition to streamlining credentialing requirements for California teachers, SB 1209 made it much easier for out-of-state teachers to earn a credential in California. For example, the legislation allowed basic skills tests from other states to be used to meet California's basic skills requirement. Previously, the CBEST was the only option for meeting the basic skills requirement.¹⁵ Out-of-state teachers who hold a credential from any state and meet the basic skills requirement now can be issued a preliminary credential without having to meet any additional requirements. To earn a professional clear credential, out-of-state teachers no longer have to participate in an induction program if they have taught for at least 2 years in another state; instead, they must complete 150 hours of professional development or a master's degree (or the equivalent) and earn a California authorization to teach English learners. SB 1209 allowed teachers with out-of-state credentials that authorize English learner instruction to qualify for English learner authorization in California.¹⁶

It is too early to know whether these changes will affect the number of credentials issued to out-of-state teachers since credentials for out-of-state teachers were already on the rise. Between 2005-06 and 2006-07 (the most recent years for which data are available), the number of credentials issued to out-of-state teachers rose 16%, from 3,081 in 2005-06 to 3,572 in 2006-07, or 1.2% of the teacher workforce for the latter year (CCTC, 2008a). Data released next year may indicate whether SB 1209 is having an impact on the number of credentials issued to out-of-state teachers.

Legislation passed in 2008 builds on SB 1209 to further remove barriers and ease entry into the teaching profession.

Legislation passed in 2008 further simplifies the credentialing process for individuals interested in teaching in California. SB 1186 (Scott) eases entry into the teaching profession for one of the existing alternative routes into the profession—the eminence credential—awarded to individuals who are recognized as having knowledge and skill in their profession that is beyond that typical of their peers. For these professionals with significant experience who are interested in teaching, a school district can recommend an eminence credential. SB 1186 modifies the credential requirements to exempt these “eminent” individuals from the CBEST requirement, possibly easing their entry into the

¹⁵ See <http://www.ctc.ca.gov/notices/coded/060028/060028.pdf> for more information on the impact of SB 1209 on out-of-state teacher credentialing.

¹⁶ See <http://www.ctc.ca.gov/notices/coded/0703/0703.pdf> for more information on EL authorizations for out-of-state teachers.

“Alongside efforts to streamline credentialing and remove barriers to entering the teaching profession, the state has implemented policies to improve the quality of teacher preparation.”

teacher workforce. In addition, SB 1186 exempts from the CBEST requirement individuals who achieve scores on the California State University’s Early Assessment Program tests that are sufficient to waive the English and mathematics placement test administered by CSU.¹⁷

Another bill, SB 1104 (Scott), modifies the requirements for the preliminary and professional clear Career Technical Education (CTE) credentials, easing the pathway for career professionals who want to become teachers. For example, the legislation reduces the work experience requirement from 5 years to 3 years, which may enable more industry professionals to become CTE teachers. The bill also moves the requirement to complete two course units in the U.S. Constitution from the preliminary CTE credential to the professional clear CTE credential, allowing professionals to more readily begin teaching. The education standard for CTE faculty remains the same, at a high school diploma or its equivalent. Chapter 4 discusses these changes to CTE credentialing requirements in greater detail.

In addition to reducing credentialing barriers, California provides financial incentives to encourage teachers to enter the profession through the Assumption Program of Loans for Education (APLE), a long-standing loan forgiveness program. APLE provides up to \$19,000 in outstanding loan forgiveness for teachers who agree to work in schools in deciles 1-5 of the API and in designated subjects, such as mathematics, science, and special education. Previous programs to provide more direct incentives to teachers, whether from the state (e.g., Governor’s Teaching Fellowship program, Cal Grant T) or through local districts, were discontinued between 2002 and 2004 and have not been reinstated.

Campuses are moving to fully implement a teaching performance assessment, despite funding concerns.

Alongside efforts to streamline credentialing and remove barriers to entering the teaching profession, the state has implemented policies to improve the quality of teacher preparation. SB 2042 (Chapter 548, Statutes of 1998, Alpert) made significant changes to the state’s teacher preparation system. Among the changes, all teacher candidates are now required to pass a state-approved assessment of teaching performance to earn a preliminary credential. The Teaching Performance Assessment (TPA) must be aligned with the state’s Teaching Performance Expectations (TPEs), which mirror the California Standards for the Teaching Profession. The TPA is a culminating assessment of teacher practice—typically including data compiled throughout coursework and student teaching—that covers a broad range of teaching skills and concludes with a video assessment of teaching performance. The TPA will also be included as a measure in the accreditation of teacher preparation programs.

Teacher preparation programs have been working toward implementing the TPA requirement for nearly a decade. Prior to SB 1209, IHEs were required to implement the TPA only if resources were made available. However, IHEs never received a budget allocation to fund the development and administration of the assessment. SB 1209 hastened implementation of the TPA by requiring its use in all multiple- and single-subject teacher

¹⁷ See Chapter 1 for a discussion of the Early Assessment Program.

preparation programs starting July 2008, regardless of funding availability. Any candidate who begins a teacher preparation program after July 1, 2008, is required to pass a TPA in order to be recommended for a preliminary credential.

Although SB 1209 encouraged the legislature to provide dedicated resources for the TPA beyond the base budget allocated to public colleges and universities, funding was not made available. The CCTC received \$500,000 in the 2006-07 state budget to complete development of a model TPA for use by colleges and universities and to provide trainings on the TPA. As campuses in the state begin full implementation in 2008-09, they are very concerned about the cost of providing candidates with assessments that are valid and reliable. To do so requires training evaluators, calibrating their assessments, and providing additional time to faculty for the increased workload. As we noted in our 2007 report, “Several university faculty and administrators expressed concern that full implementation in 2008 will require greater resources than are currently available to train all TPA assessors” (Wechsler et al., 2007).

Despite these concerns regarding the cost of the TPA, campuses have moved forward with its implementation. To partially absorb costs, interviewees across three CSU campuses reported that they have reallocated the required units that faculty must teach—assigning at least one unit to TPA training and scoring. Campuses also reported considering other cost-saving measures, including course consolidation (i.e., combining courses that overlap and cover the same material) and the consideration of additional campus-specific fees.

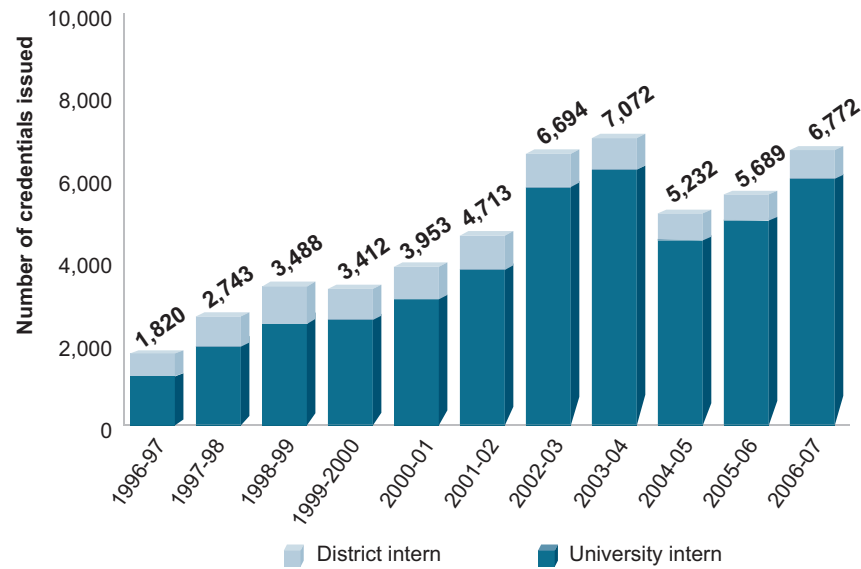
There are currently three TPAs approved for use in preparation programs throughout the state. The CalTPA is the CCTC-developed assessment that campuses may choose to use. Two alternatives to the CalTPA have also been approved. The Performance Assessment for California Teachers (PACT) is used in 30 teacher preparation programs, including 8 UC campuses, 12 CSU campuses, 9 private institutions, and 1 district. The Fresno Assessment of Student Teachers (FAST) was approved in June 2008 and was developed exclusively for the CSU Fresno campus (CCTC, 2008a). Once fully implemented, the TPA may provide a consistent measure for teacher preparation programs to assess teaching quality and provide support programs and other interventions tailored to the needs of the workforce.

The internship remains a viable alternative route into the teaching profession for a growing number of prospective teachers.

Enrollees in traditional IHE credential programs constitute the lion's share of future teachers. However, alternative routes to teaching, such as university and district intern programs, are also a significant source of new teachers. Unlike enrollment in traditional credential programs, enrollment in intern programs has been rising. Between 2005-06 and 2006-07, the number of intern credentials issued by the state increased by more than 1,000, or 19%. The number of credentials issued in 2006-07—6,772—was greater than the number in any year in the past decade except for the high in 2003-04, when just over 7,000 credentials were issued (see Exhibit 3.5).

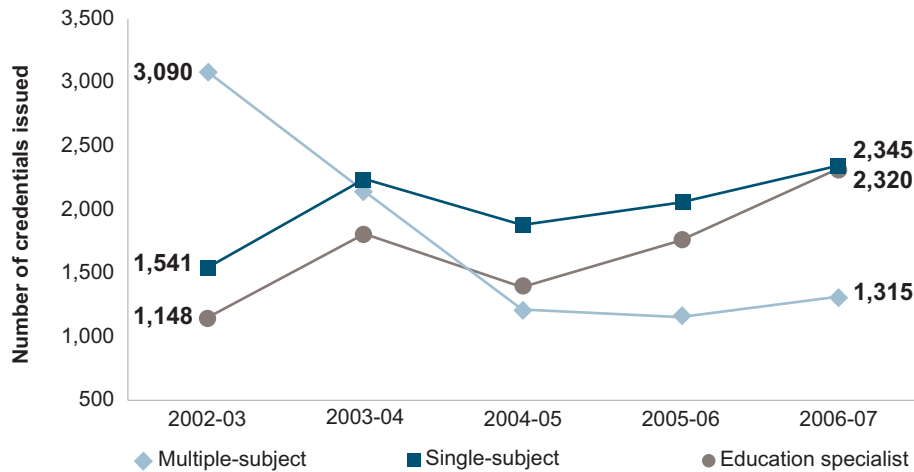
“Despite these concerns regarding the cost of the TPA, campuses have moved forward with its implementation.”

Exhibit 3.5 Number of New University and District Intern Credentials Issued, 1996-97 to 2006-07



See Appendix B for source and technical information.

Single-subject, multiple-subject, and special education intern credentials all increased in 2006-07, with the sharpest rise occurring in the number of special education intern credentials. The number of single-subject intern credentials issued in 2006-07 was 52% higher than in 2002-03, a difference of 804 credentials. More dramatically, 1,172 more special education intern credentials were issued in 2006-07 than just 4 years earlier—an increase of more than 100% (see Exhibit 3.6).

Exhibit 3.6 University Intern Credentials, 2002-03 to 2006-07

See Appendix B for source and technical information.

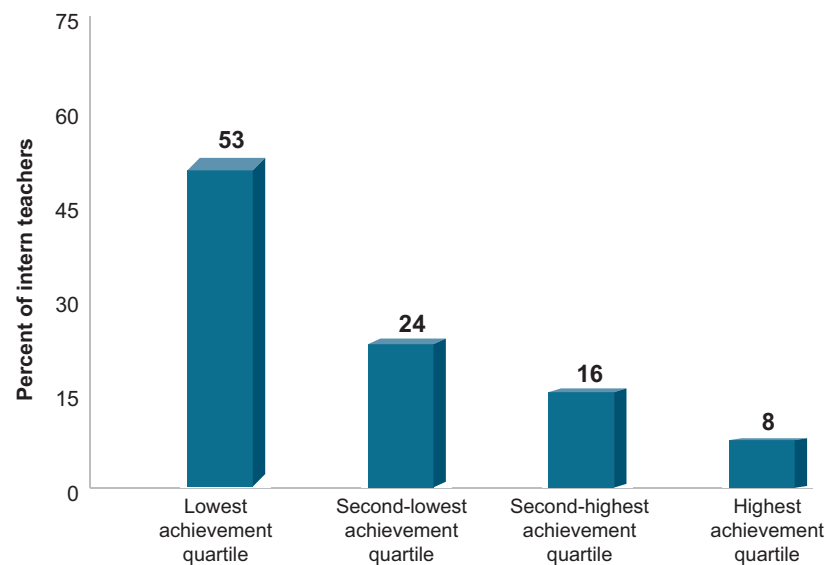
"In 2007-08, 53% of interns taught in schools in the lowest API quartile, compared with 8% in the highest-quartile schools..."

Enrollment in intern credential programs provides a particularly sensitive measure of the demand for teachers. Interns can provide a solution for districts facing immediate teacher shortages in specific areas, such as special education, mathematics, and science. Thus, the recent rise in the number of special education and single-subject interns may be reflecting districts' needs to fill these positions quickly.

In previous reports, we have expressed concerns about placing interns into classrooms and schools where students' needs are the highest (low-performing and high-poverty schools, for example). Unfortunately, current data indicate that interns are much more likely to be placed in the lowest-performing schools, as measured by the state's Academic Performance Index (API). In 2007-08, 53% of interns taught in schools in the lowest API quartile, compared with 8% in the highest-quartile schools (Exhibit 3.7). The proportion of intern teachers in low-performing schools remains unchanged, even as more candidates opt for the intern route to a credential.

Exhibit 3.7 Distribution of Interns by School-Level API, 2007-08

“SB 1209 established the Enhanced Intern Program to increase intern training, improve the distribution of interns, and reduce the ratio between mentors and interns.”



See Appendix B for source and technical information.

As the number of interns increases, so too does the system of supports available to interns.

Because interns typically have little training in teaching methods and begin teaching while simultaneously working toward a credential, mentoring and support from veteran teachers are essential. Moreover, as the data above indicate, interns disproportionately teach in the state's lowest-performing schools. To address these issues, SB 1209 provided resources to strengthen intern programs and enhance mentoring for interns.

SB 1209 established the Enhanced Intern Program to increase intern training, improve the distribution of interns, and reduce the ratio between mentors and interns. The Enhanced Intern Program increases funding, from \$2,500 to \$3,500 per participant, for intern programs that agree to meet these program enhancements, which were designed to further increase teacher quality and support. Specifically, districts that receive Enhanced Intern Program funds must agree to provide interns with an additional 40 hours of professional development in English learner (EL) instruction and 40 hours of on-site support from a similarly certificated teacher at their school. These hours are in addition to the 120 hours of training already required of interns. Districts receiving funds must also agree to maintain an equitable distribution of interns throughout schools, ensuring that low-performing schools (those in API deciles 1-3) do not have a higher percentage of interns than the district average (CCTC, 2007d). Finally, districts must use the funds to ensure no more than a 5:1 ratio of interns to mentors. Implementation of the Enhanced Intern Program began in 2006-07. During that year, 3,156 interns, or 39% of the state's 8,081 interns, participated in the enhanced program (CCTC, 2008b). Funding for the Enhanced Intern Program is included in the 2008-09 budget for the state's Alternative Certification program. The Alternative Certification program was allocated \$26.5 million in 2008-09, approximately \$5 million less than in the previous year.

SB 1209 also established the Certificated Staff Mentoring Program, which provides incentives for experienced teachers who agree to teach in low-performing schools and to mentor intern teachers in their first 2 years of teaching (see next section for more detail). The legislation also allowed mentors to support other new teachers (e.g., newly credentialed teachers). Legislation passed in 2008 (SB 1186, Scott) clarifies that the program should support both intern and newly credentialed teachers, but that districts should prioritize mentor support to target interns over credentialed novice teachers participating in an induction program. Thus, SB 1186 modifies the intent of the previous legislation to focus more on individuals currently participating in preparation programs, encouraging districts to ensure that mentor teachers provide support first to interns participating in alternative certification programs, then to novice teachers participating in an induction program.

“SB 1209 also established the Certificated Staff Mentoring Program, which provides incentives for experienced teachers who agree to teach in low-performing schools and to mentor intern teachers...”

TEACHER SUPPORT: INDUCTION AND PROFESSIONAL DEVELOPMENT

Strong teacher preparation programs provide a solid first step toward high-quality teaching. However, support and professional development must continue throughout a teacher's career. The state has invested in numerous programs that provide California teachers with such support, particularly during their first years in the profession. In this section, we describe these state programs, starting with support for beginning teachers. We then discuss broader professional development opportunities and those focused on supporting teachers to work with English learners.

The Beginning Teacher Support and Assessment Program and the Certificated Staff Mentoring Program are the state's central programs to support new teachers.

California has made a significant investment in the support of fully credentialed new teachers. All teachers in their first 2 years of teaching are required to participate in an induction program, known as the Beginning Teacher Support and Assessment (BTSA) program.¹⁸ Completion of BTSA's orientation, mentoring, formative assessments, and professional development is required to earn a professional clear credential in the state's two-tiered credential system. The BTSA program received an allocation of nearly \$129 million in the 2008-09 budget through the Teacher Credentialing Block Grant, the same as in the previous year. The program served nearly 30,000 first- and second-year teachers in 2007-08 and expects to serve between 28,000 and 31,000 new teachers in 2008-09 (personal communication with CDE, 2008).

SB 1209 had a substantial impact on BTSA (see Exhibit 3.8). The legislation required that funding be provided for 2 full years of induction, removing disincentives for districts to encourage the early completion option. It also changed the block grant funding to funding based on the number of participants, with the amount per candidate adjusted annually for inflation. Most importantly, the legislation required the CCTC to review all BTSA programs for redundancy and flexibility in order to ensure that support for novice teachers is cohesive and coherent. This report was released in December 2007.¹⁹ In

¹⁸ Intern teachers do not participate in BTSA because they do not yet hold a credential.

¹⁹ SB 1209 required an evaluation of the BTSA and intern programs. The study was conducted by the University of California, Riverside, and can be obtained from <http://www.ctc.ca.gov/reports/BTSA-Intern-Technical-Report-23-Oct-2007.pdf>.

addition, the legislation called for a review of the *Standards of Quality and Effectiveness for Professional Teacher Induction Programs*.²⁰ An advisory panel made recommendations to build stronger connections between coursework in teacher preparation and BTSA that were adopted by the CCTC in 2008.

Exhibit 3.8 SB 1209: Support for New Teachers

- Required funding for 2 full years of induction for all candidates, removing district fiscal disincentives for early completion.
- Changed the block grant funding formula for BTSA to funding based on the number of participants, with the amount per candidate adjusted annually for inflation.
- Required the CCTC to review induction programs and to revise the Standards of Quality and Effectiveness for Professional Teacher Induction Programs by 2008.
- Established the Certificated Staff Mentoring Program to award veteran teachers \$6,000 for teaching in low-performing schools and mentoring novice teachers during their first years of induction.

The CCTC is also in the process of implementing a new formative assessment system for BTSA induction programs. The Formative Assessment for California Teachers (FACT) is replacing the California Formative Assessment and Support System for Teachers (CFASST), which had been in place since 1998. After a review of the CFASST system, a team composed of BTSA program leaders concluded that the assessment needed to be more individualized and flexible. A report on FACT notes: “Rather than a sequential system of activities that a participating teacher completes, the proposed formative assessment system asks each participating teacher to build upon the knowledge, skills, and abilities that he or she brings to the induction program” (CCTC, 2008c). The new system is designed to help teachers identify areas of strength and areas of growth by working with a support provider through the formative assessment process. Thus, FACT may better allow for beginning teachers’ individual needs to be met, while also eliminating duplication between teacher preparation and induction requirements. BTSA field tested FACT in nine programs throughout the state during the 2007-08 school year. All interested BTSA programs can pilot test FACT in 2008-09.

In addition to BTSA, new teachers in low-performing schools may receive additional mentoring through the CertSMP, which, as we noted earlier in this chapter, was established by SB 1209 in 2006. The program received \$11.7 million in 2008-09, the same as in the previous year. Through CertSMP, veteran teachers are awarded \$6,000 for teaching in low-performing schools and mentoring novice teachers during their first years of induction. Each mentor must serve one to five new teachers and agree to serve in the school for 5 years. Many of the specific requirements for CertSMP are locally determined and not part of the grant application (e.g., requirements on the frequency and number of hours per week that a mentor and a mentee meet, specific types of support that are expected from the relationship). Definitions of subject matter support and classroom management are determined by the district. The legislation specifies requirements only for the qualifications of the mentor teachers and the delivery of the stipend by the district.

²⁰ See <http://www.ctc.ca.gov/educator-prep/standards/induction-program-standards.pdf> for the induction program standards adopted by the CCTC in June 2008.

Program staff reported that new teachers seem to be very pleased with the program, particularly the provision that mentors be located at the same site as the new teachers. This is in contrast to the BTSA program, which does not require that mentor teachers teach in the same schools as their mentees. Because CertSMP does require this proximity, new teachers have had more access to support relevant to their grade level and assigned subject matter area. Some challenges exist for the program, however. One challenge to districts is the cost of providing mentor teachers. Some schools have expressed concern to program staff that there are administrative costs that exceed the stipend amount, creating an additional burden for schools and districts. Another challenge exists where BTSA and CertSMP overlap in schools. BTSA has many more requirements for mentor teachers, but the CertSMP stipend is often substantially larger. Whereas CertSMP stipends are fixed at \$6,000, BTSA stipends are negotiated in each district and may vary widely. It is possible that a school can have both BTSA and CertSMP mentors working side by side but receiving vastly different compensation for their work. Some districts have had to return CertSMP funds to the state because they were not able to negotiate the stipends with their local bargaining units.

“Once teachers have completed induction, ongoing professional development can provide them with opportunities to deepen subject matter content knowledge and strengthen pedagogical skills.”

Funding for teacher professional development programs remains virtually flat in 2008-09.

Once teachers have completed induction, ongoing professional development can provide them with opportunities to deepen subject matter content knowledge and strengthen pedagogical skills. The state and federal governments provide millions of dollars to districts to support teacher professional development. Some of these programs provide targeted training, focused on specific subject areas and student populations; other programs provide districts, schools, and teachers greater discretion and flexibility over the use of professional development resources.

In 2008, the state approved a budget that includes little to no additional funding for the support of teacher development. Programs received less than a full cost of living adjustment (COLA); the allocated increase amounted to only 0.68%, which is significantly lower than typical annual COLA increases. Proposed cuts to the current-year budget may further reduce funding. Exhibit 3.9 describes major state and federal professional development programs and provides funding allocations from the 2008-09 state budget.

Exhibit 3.9 Federal and State Teacher Professional Development Programs

Program	Description	2008-09 Funding
California Subject Matter Projects	CSMP provides content-rich subject matter professional development in the following areas: mathematics, science, reading and literature, writing, physical education and health, history-social studies, international studies, foreign languages, and art.	\$9,850,000
National Board Certification Incentive Program	The program provides districts with funds to award teachers who hold National Board for Professional Teaching Standards (NBPTS) certification and who teach in low-performing schools (API 1-5). A one-time incentive award of \$20,000 is paid in \$5,000 installments for four consecutive years.	\$6,000,000
Professional Development Block Grant	The block grant includes Instructional Time and Staff Development Reform (ITSDR), Teaching as a Priority (TAP), and Intersegmental Staff Development (College Readiness Program and the Comprehensive Teacher Education Institute).	\$273,289,000
Peer Assistance and Review	PAR is designed to provide services to experienced teachers who would like to improve their skills or content knowledge.	\$29,944,000
Mathematics and Reading Professional Development Program	The MRPDP provides professional development and follow-up training for mathematics and reading teachers that are aligned with academic content standards. The program consists of 120 hours of professional development. In 2007, the program was modified to include 40 hours of professional development in English learner instruction.	\$56,728,000
Bilingual Teacher Training Program	BTTP assists kindergarten through grade 12 teachers who already possess a basic credential to attain authorizations to provide English Language Development (ELD), Specially Designed Academic Instruction in English (SDAIE), and primary language instructional services to English learners.	\$2,138,000
Reading First	This federally funded program supports increased professional development to ensure that all teachers have the skills they need to teach reading programs effectively.	\$57,433,000
California Mathematics and Science Partnership Program	Federally funded grants are awarded to eligible partnerships or educational agencies that in turn create opportunities for teachers to receive professional development in teaching mathematics and science.	\$22,804,000
Teacher and Principal Training and Recruiting Fund	Federal funds are distributed to states to increase students' academic achievement through the improvement of teacher and principal quality.	\$314,514,000

Programs such as the California Subject Matter Projects (CSMPs), as well as the federally funded California Mathematics and Science Partnership (CaMSP) program, focus on enhancing teachers' content knowledge and pedagogical skills. The CSMPs include the California Math Project and the California Science Project, which, along with the CaMSP, may serve as important sources of professional development as the state considers ways to build current teachers' knowledge and skills in mathematics and science. As we describe in Chapter 4, the state's push to move Algebra I into the eighth grade and ongoing efforts to build workforce capacity in the science, technology, engineering, and mathematics (STEM) sectors require teachers with capacity in these areas.

Other programs, such as Reading First and the Mathematics and Reading Professional Development Program (MRPDP), provide training on state-adopted reading and mathematics curricula. For example, MRPDP was established by AB 466 (Chapter 737, Statutes of 2001, Strom-Martin) in 2001 to reimburse districts for mathematics and language arts training focused on strengthening content knowledge and the incorporation of grade-appropriate materials. Teachers participate in a total of 120 hours of training—40 initial hours with 80 hours of follow-up. The program was set to be repealed in 2007 but was reauthorized until 2012 with the passage of SB 472 (Chapter 524, Statutes of 2006, Alquist). More recently, AB 2391 (Solorio) expanded the topics for the follow-up 80 hours of professional development to include data analysis and the use of data to improve instruction and student outcomes. This expansion allows districts to better meet the specialized needs of their students and teachers.

Districts also receive significant professional development resources from the state and the federal government that provide flexibility over the use of those funds. Among these resources, the Professional Development Block Grant is by far the largest single source of state funding for professional development. The block grant, created in 2005 when the state consolidated several smaller professional development programs, received an allocation of more than \$273 million in 2008-09. The federal Teacher and Principal Training and Recruiting Fund is another major resource that can be used toward professional development; funding for the program is based largely on the proportion of low-income students enrolled as part of Title II of NCLB. Finally, SB 1209 provided more discretion at the teacher level, removing the requirement for 150 seat hours for credential renewal and instead encouraging teachers to follow individualized professional development plans.

Professional development targeting instruction of English learners continues to be a focus.

In 2006-07, almost 1.57 million of California's students, or nearly 25%, were English Learners (CDE, 2008i). California's education code requires that all teachers who have even one EL student in their classroom hold the appropriate EL authorization in addition to a regular teaching credential. More specifically, the authorization must match the type of English learner services being provided by the teacher, i.e., English Language Development (ELD), Specially Designed Academic Instruction in English (SDAIE), or bilingual/primary language instruction, to be considered appropriately authorized. For example, a teacher with a Crosscultural Language Academic Development (CLAD) authorization is appropriately authorized for ELD and SDAIE but is not appropriately authorized to provide bilingual/primary language instruction. Teachers who do not hold the appropriate EL authorization are deemed "misassigned."

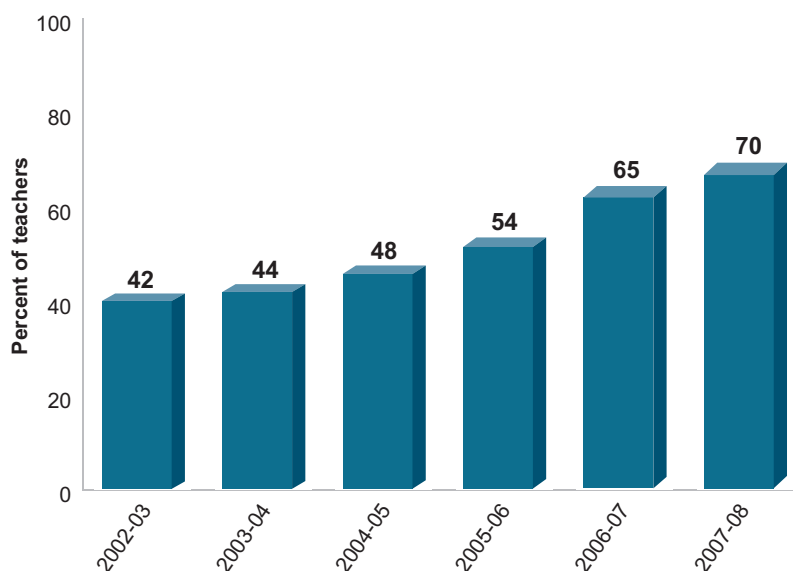
SB 2042 embedded EL preparation in the regular credentialing requirements for multiple- and single-subject teachers, thus providing automatic authorization to teach EL students. Teachers who were credentialed before the implementation of the SB 2042 teacher preparation standards can obtain EL authorization by passing the California Teachers of English Learners (CTEL) examination. Prior to the CTETL, veteran teachers who had not received EL authorization as part of their training program were required to either take coursework or pass an exam to obtain CLAD authorization. Coursework is still an option for CLAD authorization, but the last administration of the CLAD exam was in June 2006. The CLAD exam has been phased out in lieu of the CTETL exam.²¹

Preparation and training for the CTETL exam is provided by the Bilingual Teacher Training Program (BTTP). BTTP has 14 centers in 11 regions of the state that offer support and training to teachers as they prepare to earn EL authorization. EL authorization may also be obtained through participation in a staff development program, established in 1999 by SB 395 (Chapter 685, Statutes of 1999, Hughes). Given the variety of options for obtaining EL authorization, teachers have an opportunity to choose the pathway that best fits their eligibility and needs.

The proportion of California's teachers who are authorized to teach EL students has continued to rise in recent years. In 2007-08, 70% of teachers held EL authorizations, an increase of 5 percentage points over the previous year (see Exhibit 3.10). The steady increase in the number and percentage of teachers obtaining EL authorizations may be due to increased monitoring as a result of the *Williams v. California* settlement. According to the CCTC's most recent report on teacher misassignments, "The *Williams* settlement created a new focus in the review of English learner assignments resulting in better identification of teachers that lacked the authorization to provide instructional services to English learners" (CCTC, 2008d).

²¹ Although the CTETL exam replaced the CLAD exam, the CCTC did not change the name of the certificate from CLAD to CTETL. Thus, any candidate who passes the CTETL examination or completes the appropriate coursework is still issued a CLAD certificate.

Exhibit 3.10 Percentage of Fully Credentialed Teachers with English Learner Authorization, 2002-03 to 2007-08



“In 2007-08, 70% of teachers held EL authorizations, an increase of 5 percentage points over the previous year...”

See Appendix B for source and technical information.

The report notes that better monitoring of EL authorizations led to a sharp rise in the number of teachers identified as misassigned. Thus, despite improvements in EL authorizations, a large number of EL misassignments remain. The majority (53%) of all teacher misassignments between 2003 and 2007 were for lack of EL authorization. The problem is more severe at the secondary level, where EL misassignments accounted for 68% of all misassignments between 2003 and 2007, compared with 32% at the elementary level (CCTC, 2008d).

Given the number of EL students in California and the continued levels of misassignment, EL instruction has become an increasing focus of teacher professional development. In 2006, the state funded the English Language Learners Acquisition and Development Pilot Project to identify existing best practices in EL instruction. The pilot project provided funding to 44 districts for a total of \$20 million in 2007-08. The pilot project is scheduled to continue to provide funding for districts in 2008-09 and 2009-10.

The reauthorization of the Mathematics and Reading Block Grant by SB 472 in 2006 also provided additional support for EL instruction. SB 472 established the English Learner Professional Development (ELPD) Program, which provides incentive funding to local educational agencies (LEAs) for English language instruction. Funding priority is given to LEAs in which English learner students constitute 20% or more of total enrollment, LEAs that are in program improvement under NCLB, and LEAs with schools that have not met EL targets. The program provides teachers with 40 hours of EL instruction training and allows this training to count toward the Mathematics and Reading Professional Development Program requirement for 80 hours of follow up training. Teachers who have already completed their 120 hours of mathematics and reading professional development can participate in the additional 40 hours of EL training as well.

CHAPTER SUMMARY

The majority of California's future teachers will come out of the state's many teacher preparation programs. Yet, fewer teacher candidates are enrolling in these programs in the state, and fewer newly credentialed teachers are being produced, particularly those planning to teach in the elementary grades. Many factors might account for these trends. Student fees have increased, which might deter some potential candidates. The availability of alternative routes into the profession could be playing a role, given the increases in the number of interns across the state. Widespread publicity about budget cuts and potential layoffs of current teachers may also serve as a deterrent. Still, the lack of jobs at the elementary level due to declining enrollment at these grade levels is likely to be a major influence on young people's decision not to enter the profession. To counteract these trends, the legislature has enacted a number of bills to ease entry into the profession for traditional candidates, out-of-state teachers, and professionals from other fields.

The state continues to invest heavily in support systems for teachers currently in the profession. The state's long-standing program to support new teachers, BTSA, remains in place and has been streamlined to make it more effective, and the state has invested in additional mentoring and induction support for interns and newly credentialed teachers through the Certificated Staff Mentoring Program. Ongoing professional development programs for more veteran teachers remain in place and vary widely from relatively prescriptive and targeted efforts to programs that give districts, schools, and teachers greater flexibility in the use of resources. In general, budget issues have translated into no additional funds for professional development programs. One area of growth, however, has been in efforts to help more teachers learn to work with English learners.

4. THE CHALLENGE OF PREPARING STUDENTS FOR THE 21ST CENTURY

In the face of demographic shifts, a decline in new teachers entering the profession, plummeting budgetary fortunes, and struggles to maintain programs to support teachers, policymakers and local educators face the growing challenge of preparing students for postsecondary education and the ever-evolving workforce demands of the 21st century. California will need an increasingly highly educated workforce, and students without reasonable levels of educational attainment will have fewer options for meaningful employment (Public Policy Institute of California, 2008). At a time of decreasing resources, the pressure on the school system to do more has never been greater.

As we noted in the first chapter, current levels of achievement do not portend future success. Of particular concern is the current status of the secondary school population. More than one in five students entering ninth grade do not graduate from high school. Of those who do graduate, only a little more than a third are prepared to go on to a 4-year college, and many of those need remediation once they get to college. The statistics are far worse for the state's Latino and African-American students—they continue to achieve at lower levels and drop out at higher rates than their white and Asian peers. These facts raise the question of what can be done to support teachers, across all levels of the system, regardless of their formal preparation, to develop the skills and knowledge to help all students be prepared for higher education, work, and life in the 21st century.

This chapter describes state and local policymakers' efforts to improve outcomes for students and ensure that California is able to develop a workforce that can compete in the global economy of the 21st century. We focus on three key areas: (1) the growing movement to reform high schools, (2) efforts to strengthen mathematics and science education, and (3) renewed attention to providing Algebra I to students in the eighth grade. In each of these areas, we discuss the challenges that policymakers are trying to address and the implications for the teacher development system.

STRATEGIES TO REFORM HIGH SCHOOLS

Given the sense of urgency to solve the state's achievement and dropout challenges, there has been a growing movement to reform high schools. The goal is both to reduce the number of students who drop out and to ensure that all students are prepared for any postsecondary options they choose, whether they go directly into the workforce, attend a 2- or 4-year college or a trade school, or accept an apprenticeship.

Efforts to improve high schools have focused largely on making schools more personalized (e.g., through smaller high schools and small learning communities), increasing academic rigor (e.g., requiring all students to take the A-G curriculum, increasing access to Advanced Placement and International Baccalaureate courses), and making coursework more relevant (e.g., integrating a career focus into coursework). The focus on these three areas reflects a broad consensus within the high school reform movement that "high schools must find ways to ensure that all graduates leave prepared for college and skilled jobs, while simultaneously finding ways to curb the nation's massive dropout problem" (Jerald, 2006) and has been spurred by generous funding from the Bill & Melinda Gates

"... policymakers and local educators face the growing challenge of preparing students for postsecondary education and the ever-evolving workforce demands of the 21st century."

“...student outcomes will not improve in the absence of fundamental shifts in classroom practice.”

Foundation, the James Irvine Foundation, Carnegie Corporation of New York, and other philanthropic organizations that have made high school reform a high priority. In California, this has resulted in the breakup of some large, comprehensive high schools into smaller learning communities, schools within schools, and small autonomous schools; the growth of small charter high schools, many of which have an explicit focus on preparing students to enter college; and an expansion of Career Technical Education (CTE) programs, including career academies.

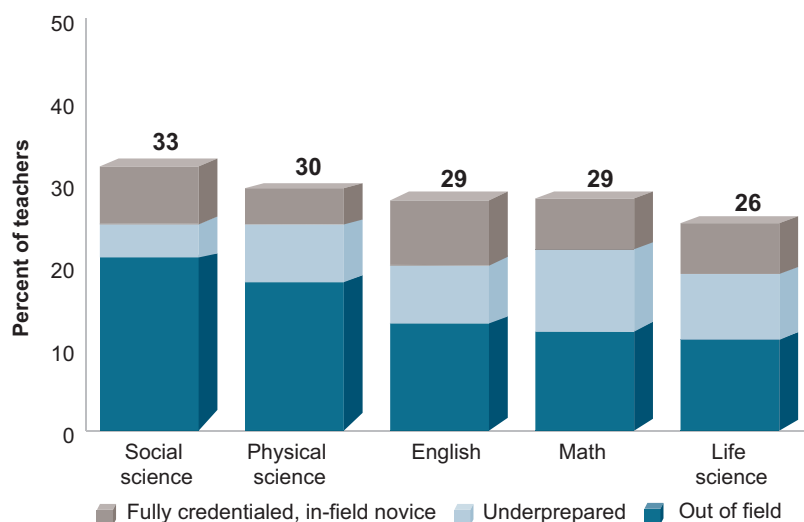
What has been missing from many of these reform efforts, however, is an explicit focus on teachers and the preparation and support they need to implement strategies that make high schools more supportive, personalized, challenging, and meaningful for students. In fact, one lesson from national efforts to improve high schools over the past 8 years is that student outcomes will not improve in the absence of fundamental shifts in classroom practice. For example, a study of the Bill & Melinda Gates Foundation’s small-school initiative found that the quality and rigor of classroom instruction in these high schools had not changed very much, the quality of student work was “alarmingly low,” and there was little difference in student achievement results between most Gates-funded high schools and their traditional counterparts (American Institutes for Research & SRI International, 2005). These findings suggest that structural changes alone cannot improve student outcomes without corresponding changes in teacher practice.

Key, then, to the success of any high school reform effort is the development of a high-quality teaching force with the skills and knowledge to teach a rigorous academic curriculum, to help students apply their learning in real-world contexts, and to provide a supportive environment for students in any high school setting. This requires a teacher development system that adequately prepares, supports, and provides ongoing professional development to teachers. Yet, as we describe next, too many high school teachers lack even minimal qualifications in the content areas they teach.

Many high school teachers in California lack a credential, are teaching outside of their authorized subject areas, or are new to the profession.

In California, one-quarter to one-third of high school teachers in each of the core subject areas—social science, physical and life sciences, English, and mathematics—are either underprepared, teaching out of field, or in their first or second year of teaching (see Exhibit 4.1). While many high school teachers of core content areas lack even minimal training in the subject areas they teach, even fewer are likely to have the skills and knowledge to help students make connections between academic content and real-world applications of the content. Given the complexity of the teaching required in many “re-forming” high schools, the data raise questions about whether high schools in fact have the staff capacity to implement reform strategies.

Exhibit 4.1 Percentage of Out-of-Field, Underprepared, and Novice High School Teachers, by Assignment, 2007-08



See Appendix B for source and technical information.

“...one-quarter to one-third of high school teachers in each of the core subject areas—social science, physical and life sciences, English, and mathematics—are either underprepared, teaching out of field, or in their first or second year of teaching...”

The debate over the role of career technical education has taken center stage in policy discussions about high school reform.

Within this movement to reform high schools is a growing debate over the role of career technical education. Proponents believe that CTE is one strategy that can “positively impact high school graduation rates, postsecondary enrollment, and labor market outcomes” by connecting classroom learning with real-world applications (American Youth Policy Forum, 2007). Governor Schwarzenegger, a strong advocate of CTE, has invested new and ongoing funding for CTE programs, which the state defines as programs of study that involve a multiyear sequence of courses that integrate core academic knowledge with technical and occupational knowledge to provide students with a pathway to postsecondary education and careers.²² These investments included \$80 million in the 2006-07 state budget (including \$20 million to expand CTE courses, \$40 million in one-time funds for CTE equipment and facilities, and \$20 million for community colleges to work with high schools to expand CTE programs) and \$52 million in the 2007-08 state budget to continue these efforts to build and improve CTE by enhancing curriculum and improving articulation between K-12 and community college programs (California Office of the Governor, 2008b). The 2008-09 state budget provides more than \$70 million in funds for CTE.

Some believe that CTE can create viable options for students who do not plan to attend college, while others express concern that CTE, like vocational education before it, may lead to tracking of lower-performing students, especially Latinos and African-Americans (Oakland Tribune, 2008). Supporters of an approach called “multiple pathways” believe that all students need to engage in “programs of academic and technical study

²² See the California Department of Education Career Technical Education Web site, <http://www.cde.ca.gov/ci/ct/>.

“Some believe that CTE can create viable options for students who do not plan to attend college, while others express concern that CTE... may lead to tracking of lower-performing students...”

that integrate classroom and real-world learning organized around multiple sectors of industry” (Hoachlander, 2008). They argue that current efforts to reform high schools are too piecemeal or narrow and that multiple pathways offer a comprehensive, coherent strategy to “re-engage high school students in serious learning” while connecting to the needs of the state’s economy (ConnectEd, 2008). Proponents of multiple pathways believe that the skill set needed for college and for the workplace are one and the same—because the economy as a whole needs a more skilled workforce, they believe “all young people need both academic and career education to graduate from high school with access to a full range of postsecondary options” (Oakes, 2007).

Regardless of the specific approach a school or district chooses to improve outcomes for students, teachers need appropriate training and support. This is especially the case when teachers are asked to blur the traditional distinction between core academic courses and career technical courses, a task that requires significant content knowledge and pedagogical skill to implement effectively. For instance, Oakes (2007) writes that teachers in multiple pathways programs need competency in four areas: (1) deep and broad core academic content knowledge and industry-related technical knowledge; (2) pedagogical skills to provide students with instruction that is experiential, project-based, and accomplished by small groups of students that accommodates and capitalizes on student’s prior knowledge and skills, and that includes multiple assessments; (3) professional expertise to collaborate and work effectively with other teachers and with nonschool partners; and (4) foundational understandings of the traditional split between academics and vocational education and of the rationale for a multiple pathways approach.

The state has approved new requirements for CTE credentials to ease entry and improve preparation.

For CTE programs (and, by extension, multiple pathways programs) to be effective, of course, they need to be staffed by teachers who are fully prepared to meet the complex challenges that high school classrooms present, including, but not limited to, the challenge of meeting the needs of diverse groups of learners.²³ But not all CTE teachers may be adequately prepared to make CTE coursework more rigorous, engaging, and better aligned with the skills that businesses expect new workers to have. CTE teachers typically come from industry and are not required to have any academic training beyond high school. Although experience in business or industry is a likely fit with the demand for relevance in CTE courses, the CTE credential, unlike other teaching credentials, does not require that an individual possess a bachelor’s degree or complete a preparation program prior to obtaining a preliminary credential. Rather, CTE teachers obtain a preliminary credential based on having a high school diploma (or an equivalent) and relevant work experience, and earn their professional clear credential on completing a CTE teacher preparation program. In 2007-08, there were nearly 8,500 CTE teachers (5,000 full-time equivalent) in California public schools (Ed-Data, 2008b).

In March 2007, the California Commission on Teacher Credentialing (CCTC) convened an advisory panel to review CTE preparation and credentialing requirements. SB 52 (Chapter 520, Statutes of 2007, Scott), signed in October 2007 after the panel had already begun meeting, made several changes to CTE credentialing and further directed

²³ Although it would be informative to analyze the credentials and teaching experience of CTE teachers, the way the information is collected and reported in the state’s current data system precludes such analyses.

the work of the panel. The panel recommended additional changes to the requirements for the preliminary and professional clear CTE credentials to make it easier for prospective CTE teachers to enter the profession and to improve the training and support they receive prior to teaching (CCTC 2008e; see Exhibit 4.2). The CCTC recently adopted these recommendations.

“For CTE programs... to be effective, of course, they need to be staffed by teachers who are fully prepared to meet the complex challenges that high school classrooms present...”

Exhibit 4.2 CTE Previous and New Preliminary Credential Requirements

CTE Preliminary Credential Requirements

Previous Requirements	New Requirements
1. Preliminary credential valid for 5 years.	1. Preliminary credential valid for 3 years.
2. High school diploma/equivalent.	2. High school diploma/equivalent.
3. Recommendation from an approved program sponsor or the employer.	3. Recommendation from an approved program sponsor.
4. Five years work experience or equivalent.	4. Three years work experience or equivalent, including certifications or licenses.
5. One year work experience in the last 3 years.	5. One year work experience in the last 3 years or 2 years work experience in the last 5 years.
6. Advanced industry certification does not qualify as work experience.	6. Advanced industry certification would qualify as work experience, thereby reducing the number of years required.
7. College-level coursework or examination on U.S. Constitution.	7. <i>Moved to clear credential requirement.</i>

CTE Clear Credential Requirements

Previous Requirements	New Requirements
1. Possession of a valid preliminary credential.	1. Possession of a valid preliminary credential.
2. Four successful teaching terms and a total of 180 hours or 12 semester units is the only option allowable to earn the clear credential.	2. Four successful teaching terms or two successful terms of teaching and an advanced preparation program or the equivalent. Expanded options for completing advanced preparation include National Board Certification, district-sponsored teacher development programs, induction, mentoring, or documentation of successful teaching.
3. Completion of Level I and II teacher preparation (12 semester units or 180 hours).	3. Completion of the preliminary CTE teacher preparation program (9 semester units or 135 hours). Program includes instruction in SDAIE.
4. One unit of health education.	4. Health education would continue to be a part of the clear credential program.
5. <i>Formerly a preliminary credential requirement.</i>	5. College-level coursework or examination on U.S. Constitution.

Source: CTC (2008e).

To streamline entry into the profession and potentially increase the supply of CTE teachers, the work experience requirement has been reduced from 5 years to 3 years, and advanced industry certification can be counted toward work experience. In addition, the requirement for recent work experience has been expanded to 1 year of experience in the last 3 years *or* 2 years in the last 5 years. Under the new standards, the U.S. Constitution requirement has been moved from the preliminary to the clear credential, and there are more options for teachers to complete their clear credential. The CTE credential also will now authorize teaching in both full- and part-time teaching assignments.²⁴

To improve the fit between CTE faculty and the demands of the classroom, the new standards also aim to strengthen preparation. For example, the new requirements restrict the preliminary credential to 3 years, down from 5 years, thus requiring CTE teachers to complete a teacher preparation program in 3 years, instead of 5, to earn their professional clear credential. This change was made in response to findings suggesting that some CTE teachers were not completing their preparation program until the fifth year; the requirement thus reduces the amount of time a CTE teacher is in the classroom without completing teacher preparation. Furthermore, now only approved CTE preparation programs can recommend an individual for a preliminary CTE credential. Previously, any employer (e.g., a district) or approved program could recommend an individual for a preliminary CTE credential, but since employers did not necessarily provide preparation, it was possible for CTE teachers to delay the start of their training. Under the new requirement, districts can hire CTE teachers and direct them to an approved preparation program. Once they are enrolled in the preparation program, they are given their preliminary credential, thus better ensuring that the CTE teachers are participating in and supported by a preparation program when they begin teaching. Finally, because CTE teachers have not been required to have any preparation prior to receiving their preliminary credential, they will now be required to participate in an orientation in the first few weeks of teaching. They will also be required to receive training in instructing English learners and students with special needs to earn the clear credential.

Currently, 16 institutions prepare prospective CTE teachers, including 6 universities. The rest of the programs are offered by county offices of education and districts.²⁵ All 16 will have to transition to the new standards by August 1, 2010, and will have to submit their programs for CCTC approval.

SB 1104, authored by Senator Scott, implements several of the CTE advisory panel's recommendations to modify the requirements for earning a preliminary or professional clear CTE credential. Legislators also considered several other CTE-related bills during the 2007-08 legislative session. For example, AB 2648 (Chapter 681, Statutes of 2008, Bass) codifies and defines a multiple pathways program as "a multiyear, comprehensive high school program of integrated academic and technical study" that (1) is organized around a broad theme, interest area, or industry sector; (2) ensures that all pupils have curriculum choices that prepare them for career entry and for a full range of postsecondary options; and (3) includes an integrated core curriculum meeting A-G requirements and an integrated technical core sequence of at least four related courses, as well

²⁴ Prior to SB 52, the CTE credentialing structure differentiated between part-time and full-time teaching. The part-time CTE credential required half as much teacher preparation.

²⁵ Three CSU campuses (Long Beach, San Bernardino, and San Francisco State) and three UC campuses (Berkeley, Riverside, and Los Angeles) have approved CTE preparation programs, as do the following county offices of education—Butte, Fresno, Imperial, Kern, Los Angeles, Mendocino, Santa Clara, Sacramento, San Diego, and San Joaquin. See <http://www.ctc.ca.gov/educator-prep/approved-programs.html>.

as a series of work-based learning opportunities and support services (see Exhibit 4.3). The bill also requires the Superintendent of Public Instruction, in conjunction with higher education institutions, the legislature, and other stakeholders, to develop a report by December 2009 that explores the feasibility of expanding and establishing career multiple pathways programs in high schools.

Exhibit 4.3 AB 2648: Defining Multiple Pathways Programs

AB 2648 codifies and defines a multiple pathways program as the following:

A multiyear, comprehensive high school program of integrated academic and technical study that

- Is organized around a broad theme, interest area, or industry sector.
- Ensures that all pupils have curriculum choices that prepare them for career entry and for a full range of postsecondary options, including 2- and 4-year college, apprenticeship, and formal employment training .
- Includes an integrated core curriculum meeting A-G requirements and is delivered through project-based learning and other engaging instructional strategies that intentionally bring real-world context and relevance to the curriculum.
- Is composed of an integrated technical core sequence of at least four related courses that provide pupils with career skills and are aligned to and underscore academic principles.
- Provides a series of work-based learning opportunities that begin with mentoring and job shadowing and evolve into intensive internships, school-based enterprises, or virtual apprenticeships.
- Offers support services, including supplemental instruction in reading and mathematics, that help pupils master the advanced academic and technical content that is necessary for success in college and career.

EFFORTS TO IMPROVE THE SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS (STEM) WORKFORCE

Related to recent efforts to improve the high school experience for students through CTE is a strong interest of policymakers in the four STEM fields: science, technology, engineering, and math. Because “California’s long term economic prospects...are largely dependent on the availability of a workforce that has the scientific and mathematical skills to help California’s knowledge-based industries thrive,” it is imperative that the state invest in the teacher workforce (California Office of the Governor, 2005). As noted recently in a report by the California Council on Science and Technology (CCST) and the Center for the Future of Teaching and Learning (CFTL), *Critical Path Analysis of California’s Science and Technology Education System*, the state’s heavy dependence on the STEM sectors requires that it has enough fully prepared and effective mathematics and science teachers to provide high-quality science and mathematics instruction that serves “as building blocks for success in the workplace and in higher education” (CCST & CFTL, 2007).

“...the state’s heavy dependence on the STEM sectors requires that it has enough fully prepared and effective mathematics and science teachers to provide high-quality science and mathematics instruction...”

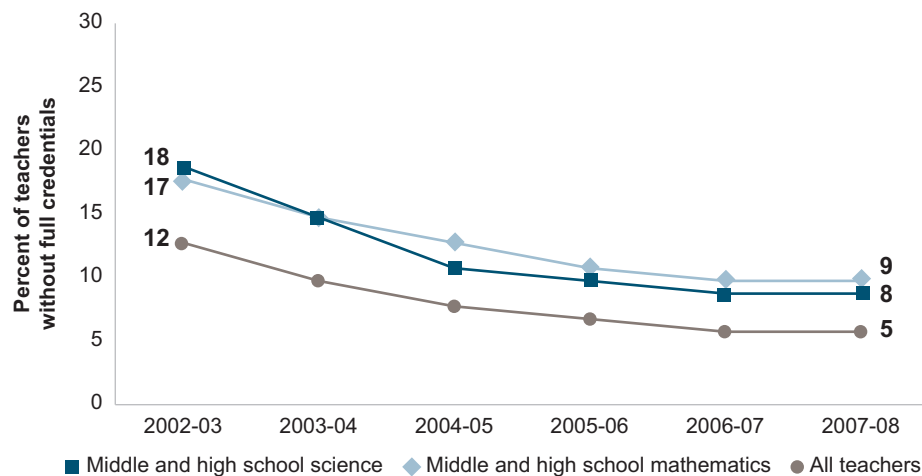
“In 2002-03, nearly one-fifth of all middle and high school math and science teachers were underprepared. By 2007-08, less than 10% were underprepared...”

The report also maintains that California lacks a cohesive system to recruit, prepare, place, and support teachers in the STEM disciplines. As described next, efforts are under way to recruit more mathematics and science teachers, yet shortages remain, particularly in those schools that are most in need of the best and most effective teachers.

California continues to face shortages of mathematics and science teachers, especially in low-performing schools.

Although there are shortages of secondary teachers across all core subject areas, the shortages of mathematics and science teachers in middle and high schools are particularly salient, given that California’s economy and future growth depend on the development of a highly skilled workforce, particularly in the STEM fields. Statewide, there has been a considerable decline in the percentage of underprepared mathematics and science teachers. In 2002-03, nearly one-fifth of all middle and high school math and science teachers were underprepared. By 2007-08, less than 10% were underprepared (Exhibit 4.4). Among first- and second-year mathematics and science teachers, however, approximately one-third were underprepared; in contrast, one-fourth of all first- and second-year teachers in the state were underprepared (see Exhibit A.14).

Exhibit 4.4 Percentage of Underprepared Mathematics and Science Teachers, 2002-03 to 2007-08

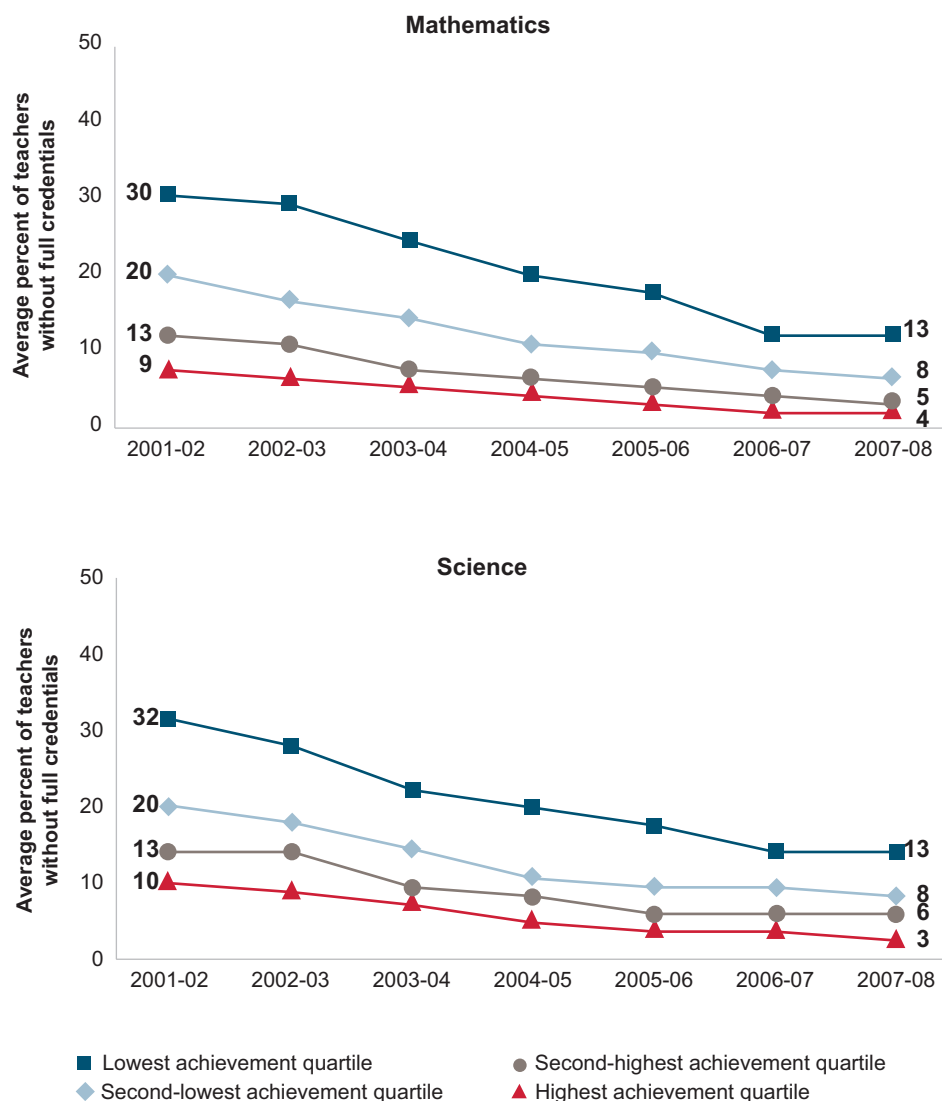


See Appendix B for source and technical information.

Furthermore, underprepared middle and high school mathematics and science teachers are not equitably distributed. The lowest-performing secondary schools are still three to four times as likely to have underprepared mathematics or science teachers as the highest-performing schools (an average of 13% of teachers underprepared in the lowest-performing schools vs. an average of 3% and 4% underprepared in science and mathematics, respectively, in the highest-performing schools) (Exhibit 4.5).

Exhibit 4.5 Percentage of Underprepared Middle and High School Mathematics and Science Teachers, by API Quartile, 2001-02 to 2007-08

“The lowest-performing secondary schools are still three to four times as likely to have underprepared mathematics or science teachers as the highest-performing schools...”



See Appendix B for source and technical information.

Legislation passed in 2008 focuses specifically on the maldistribution of mathematics and science teachers. SB 1660 (Romero) will allow districts (with mutual agreement from teacher bargaining units) to use funds from the Professional Development Block Grant (see Chapter 3) to compensate new and existing mathematics and science teachers in schools ranked in decile 1, 2, or 3 on the API in a separate manner from the uniform allowances for years of training and experience. Proponents of the bill argued that differentiated pay of this type is especially necessary for mathematics and science teachers because of the more competitive salaries in other fields for which potential teacher candidates with mathematics or science backgrounds are qualified.

The state's higher education systems are engaged in efforts to reduce the teacher shortages in mathematics and science.

“...CSU agreed to double the number of mathematics and science credentials by 2010... UC committed to quadrupling the annual production of credentialed science and mathematics teachers by 2010...”

To address the shortage and maldistribution of mathematics and science teachers, California's colleges and universities must be included in efforts to produce more graduates with degrees in the STEM disciplines. And, in fact, as part of the 2004 Higher Education Compact, the UC and CSU systems committed to increasing the number and quality of mathematics and science teachers produced in California. A year later, in 2005, Governor Schwarzenegger launched his Math and Science Initiative, a collaboration with UC, CSU, and the private sector “to expand and strengthen [the] skilled workforce by improving the quality of K-12 science and mathematics instruction through an expansion of the supply and preparation of teachers in these fields” (California Office of the Governor, 2005).

Funding provided through the Governor's Math and Science Initiative supports CSU's Math and Science Teacher Initiative (MSTI) and UC's California Teach: One Thousand Teachers, One Million Minds. In 2005-06, the first year of funding for the Governor's Math and Science Initiative, the state budget included \$250,000 for the CSU system and \$750,000 for the UC system. In accepting these funds, CSU agreed to double the number of mathematics and science credentials by 2010, from 750 per year to 1,500 per year. UC committed to quadrupling the annual production of credentialed science and mathematics teachers by 2010, from 250 per year to 1,000 per year. CSU and UC have continued to receive resources from the state—the 2008-09 state budget provides \$1.1 million to the two systems for the initiative.

CSU's Math and Science Teacher Initiative consists of six primary strategies: (1) creation of new credential pathways, (2) provision of financial support to students, (3) recruitment to expand the number and diversity of candidates, (4) collaboration between CSU campuses and their local community colleges, (5) delivery of instruction and resources through the Internet, and (6) partnerships with corporate sponsors and federal laboratories (CSU, 2008b; see Exhibit 4.6). CSU campuses are engaged in a variety of efforts to increase the production of mathematics and science credentials. To supplement the initiative, 16 campuses have received more than \$7 million in grants through the National Science Foundation Robert Noyce Teacher Scholarship program. These scholarships “provide more than 200 math and science majors interested in teaching with \$10,000 stipends for up to two years to support their upper division and credential study” (CSU, 2008b). Scholarship recipients must teach mathematics or science in a high-need district for at least 2 years for every year of financial support they receive.²⁶

²⁶ See <http://www.nsf.gov/pubs/2008/nsf08532/nsf08532.htm> for details about the program, as well as the definition of “high-need” districts.

Exhibit 4.6 CSU's Math and Science Teacher Initiative

CSU's Math and Science Teacher Initiative consists of six primary strategies:

1. Create multiple new pathways toward mathematics and science teaching credentials, including the new foundational-level mathematics credential for middle school teachers and blended programs for undergraduates in which an academic major and teacher preparation are integrated in an articulated program of study. Other efforts focus on fast-tracking professionals in mathematics- and science-based fields into careers in teaching and assisting current teachers in other fields to obtain additional teaching authorizations in mathematics or science.
2. Provide financial support for new mathematics and science teachers through scholarships, loan assumption/cancellation programs (e.g., APLE), paid tutoring, and salaried internship opportunities to make teacher preparation financially attainable and attractive for college students of all backgrounds.
3. Engage in recruitment efforts to expand and diversify the pool of candidates, including college students and recent graduates; community college and high school students; mid-career and pre-retirement professionals; recent retirees in science and technology industries; military men and women leaving service; and existing teachers with potential to change teaching fields. Strategies include outreach, workshops, advising, test preparation, paid tutoring opportunities, and stipends.
4. Collaborate with community colleges to implement integrated 2-year/4-year mathematics and science credential preparation programs. The Chancellor's Offices of the CSU and the California Community Colleges have a Memorandum of Understanding that identifies and supports strategies to foster these transfer pathways.
5. Deliver systemwide, Internet-supported mathematics and science credential preparation resources and opportunities to accommodate the needs of a diverse pool of candidates.
6. Develop and institutionalize partnerships with federal laboratories, business, and industry to enhance the attractiveness of teaching careers in mathematics and science. These partnerships can provide opportunities for current and future science and mathematics teachers to participate in paid summer research or work.

"From 2002-03 to 2006-07, CSU experienced a 68% increase in the number of mathematics and science credentials, from 768 to 1,289..."

Source: CSU (2008c).

From 2002-03 to 2006-07, CSU experienced a 68% increase in the number of mathematics and science credentials, from 768 to 1,289 (CSU, 2008c; CSU, 2008d). According to a report prepared by CSU on the implementation of MSTI, the increases have been largest for the mathematics credential, which more than doubled from 349 in 2002-03 to 788 in 2006-07, an increase that CSU attributes largely to the introduction of the foundational-level mathematics credential (discussed in the next section). During the same period, the number of science credentials produced increased from 419 to 501, a jump of just 20%, with the largest gains in chemistry and geoscience.

To meet its credential goals for the Governor's Math and Science Initiative, UC launched California Teach: One Thousand Teachers, One Million Minds.²⁷ The goal of the initiative is to encourage students interested in mathematics, science, or engineering to consider teaching as a career. Each of the nine UC campuses has designed programs in support of this goal. For example, UC Berkeley offers students majoring in mathematics, science, or engineering a sequence of courses and classroom experiences designed to help them learn about the field of teaching while completing their undergraduate de-

²⁷ See <http://www.universityofcalifornia.edu/academics/1000teachers/>.

“In 2002-03...the state issued 1,005 mathematics credentials. By 2006-07, that figure jumped to 1,804, with 1,090 mathematics credentials and 714 foundational-level mathematics credentials issued...”

grees. Across its nine campuses, the percentage of new mathematics credentials issued by UC increased by 55%, from 75 in 2002-03 to 116 in 2006-07. The number of science credentials issued annually, however, decreased by 25% during that same period, from 134 in 2002-03 to 100 in 2006-07.²⁸

Foundational-level mathematics and science credentials may also help ease the shortages.

Another effort to increase the number of teachers with mathematics and science credentials and ease the shortage are foundational-level credentials now being issued by the state. In 2003, the CCTC began issuing a foundational-level mathematics credential that authorizes an individual to teach mathematics courses up through algebra and geometry at any grade level. Since then, the number of individuals earning a mathematics authorization has increased by nearly 80%. In 2002-03, before the state began issuing the foundational-level mathematics credentials, the state issued 1,005 mathematics credentials. By 2006-07, that figure jumped to 1,804, with 1,090 mathematics credentials and 714 foundational-level mathematics credentials issued (CCTC, 2008f). Demand for these foundational-level mathematics credentials may continue to rise as districts and schools consider ways to address any new staffing needs created by the state's emphasis on increasing the number of students who take Algebra I in the eighth grade (discussed in the next section).

Given the success of the foundational-level mathematics credential in increasing the number of fully prepared teachers, the CCTC recently approved a new foundational-level science credential. The foundational-level science credential will authorize individuals to teach general or introductory science at any grade level or integrated science (Pre-K to 8), but not departmentalized biology, chemistry, geoscience, or physics courses (CCTC, 2008g).

These foundational-level credentials provide additional options for districts and schools in assigning teachers to mathematics and science courses and provide more teachers an opportunity to obtain mathematics and science authorizations. Both of these credentials can be earned as stand-alone, single-subject credentials or can be added as authorizations to an existing single-subject credential in a different content area, such as English or social studies. Teachers with multiple-subject credentials may earn a single-subject credential in either foundational-level mathematics or science by fulfilling subject matter competency requirements.

In fact, faculty from CSU campuses reported that they are encouraging prospective teachers to add these foundational-level credentials and other authorizations to their existing credentials by taking additional courses or CSET exams as a means to increase their flexibility, mobility, and employability. With additional authorizations, including mathematics or science, elementary teachers can teach at the middle or high school level, thus providing them with greater mobility across school levels. Likewise, middle and high school teachers authorized to teach one subject area could add authorizations to teach additional content areas, thereby expanding their employment options and providing districts with greater flexibility in staffing.

²⁸ Mathematics and science credential data came from CCTC. SRI analyzed the data.

The discussion about mathematics and science preparation and the foundational-level mathematics and science credentials is particularly salient in light of the state's press for students to take Algebra I in the eighth grade. We turn to this topic next.

INCREASING EXPECTATIONS FOR MIDDLE SCHOOLS

Policy interest in strengthening mathematics and science achievement extends to middle schools as well as high schools. The California mathematics content standards, adopted by the State Board of Education (SBE) in 1997, set standards by discipline (e.g., algebra, geometry) for grades 8 through 12, effectively pushing algebra content into the eighth grade. Many, but certainly not all, districts have since encouraged students to take and pass the course in the eighth grade.²⁹ In fact, since 1999, when the CST exam was put in place, the percentage of students taking algebra in eighth grade has increased from 16% to more than 50%. Yet, among eighth graders taking the Algebra I CST, only 42% were proficient. As we describe later in this section, too many middle school students are enrolled in Algebra I classes in which their teachers may lack the background and preparation necessary to teach the subject effectively.

In July 2008, the SBE made a decision to require all eighth-grade students to be assessed in Algebra I by 2012. That policy made California the first state in the nation to require Algebra I at such an early level. Although a court ruling in October 2008 put that decision on hold at least temporarily, if the requirement is put in place, essentially all students would have to take Algebra I by or in the eighth grade. This change may exacerbate the existing shortage of fully prepared mathematics teachers, particularly in the state's lowest-performing schools.

The CCTC is currently reviewing different documents that authorize the teaching of mathematics at various grade levels and how much preparation those teachers are required to have. In general, if Algebra I is taught as a departmentalized class (as is typical), teachers need to have a single-subject mathematics credential or a mathematics authorization. Exhibit 4.7 lists the documents that currently authorize a teacher to teach algebra and notes which of these are compliant with the federal No Child Left Behind Act of 2001 (CCTC, 2008f). Appendix C provides a more detailed table.

“In July 2008, the SBE made a decision to require all eighth-grade students to be assessed in Algebra I by 2012. That policy made California the first state in the nation to require Algebra I at such an early level.”

²⁹ At the high school level, since 2003-04, the state has required all students to complete 1 year of Algebra I to earn a high school diploma. Knowledge of algebraic concepts is also required to pass the mathematics section of the state's exit exam. Further advanced mathematics required for admission to California's institutions of higher education, such as Geometry and Algebra II, as well as the recommended additional courses of Trigonometry and Calculus, consider Algebra I a prerequisite for the sequence.

Exhibit 4.7 Credentials Authorizing Instruction in Algebra I

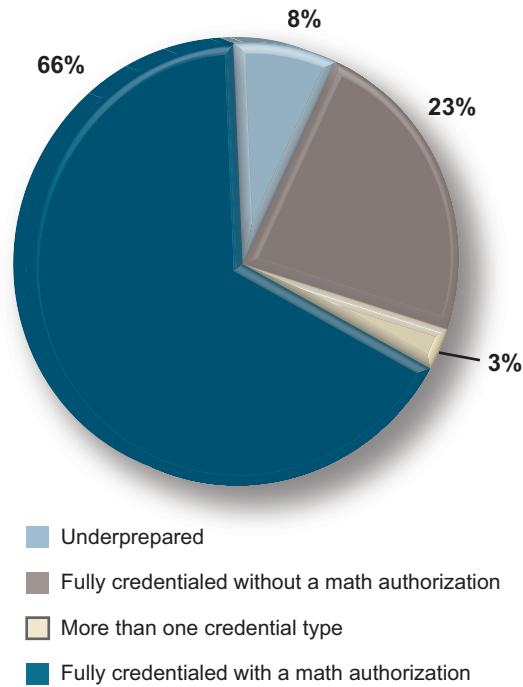
Credential	NCLB Compliant
Single-subject credential in mathematics	Yes
Single-subject credential in foundational-level mathematics	Yes
Subject matter authorization in mathematics	Yes
Supplementary authorization in (introductory) mathematics	If holder completed HOUSSE*
Multiple-subject credential	Yes, for self-contained classrooms; for core teachers, holder can complete HOUSSE*
Short-term staff permit in mathematics	No
Provisional intern permit in mathematics	No
Local teaching assignment option	If holder completed HOUSSE*
Single-subject limited assignment permit in mathematics	If holder completed HOUSSE*

*HOUSSE is the High, Objective, Uniform State Standard of Evaluation for meeting the “highly qualified” teacher requirements under NCLB. This table has been adapted from a more detailed table produced by the CCTC, which is provided in Appendix C.

One-third of middle school algebra teachers in California may lack the background to teach the subject effectively.

Research suggests that a background in mathematics is related to gains in student achievement (Goldhaber & Brewer, 2000; Hill, Rowan, & Ball, 2005). However, as students are pressed to take Algebra I in middle school, data indicate that too many middle school teachers providing instruction in algebra do not have the proper credentials to teach the subject and may not have a background in mathematics that would enable them to teach the subject effectively. In 2007-08, one-third of the state’s nearly 3,800 middle school algebra teachers either were underprepared or held a full credential in a different subject area, including those with a multiple-subject credential.³⁰ These teachers collectively taught more than 81,000 middle school students. Two-thirds of all middle school algebra teachers were fully credentialed and held a math authorization (see Exhibit 4.8).

³⁰ Of all middle school teachers teaching Algebra I, 308 were underprepared and 868 were teaching out of field.

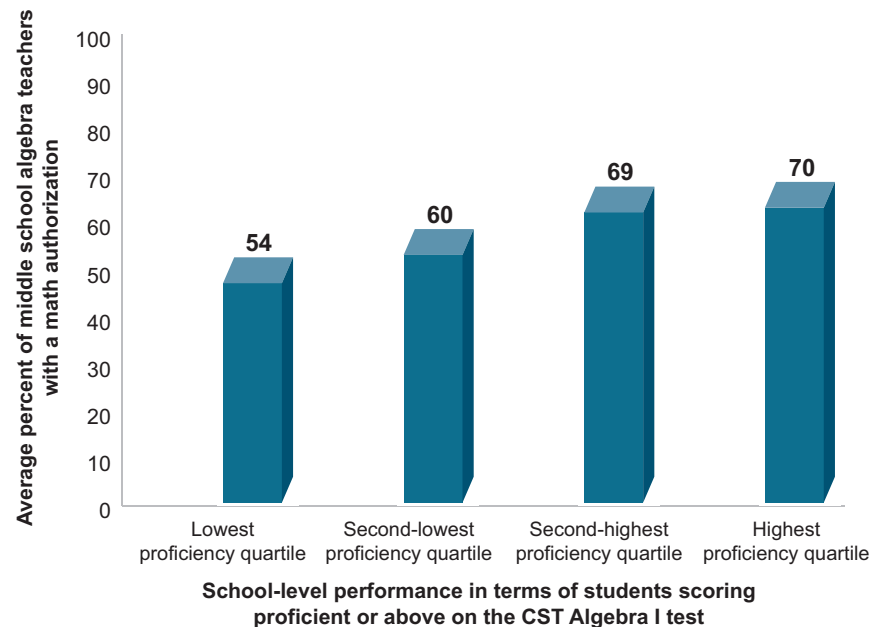
Exhibit 4.8 Credential Status of Middle School Algebra Teachers, 2007-08

See Appendix B for source and technical information.

“Middle schools with the lowest CST Algebra I proficiency rates are less likely to have fully credentialed algebra teachers with a mathematics authorization than schools with the highest proficiency rates...”

In addition, fully credentialed algebra teachers with mathematics authorizations are not equitably distributed. Middle schools with the lowest CST Algebra I proficiency rates are less likely, on average, to have fully credentialed algebra teachers with a mathematics authorization than schools with the highest proficiency rates (54% versus 70%) (see Exhibit 4.9).

Exhibit 4.9 Average Percentage of Fully Credentialed, Math-Authorized Middle School Algebra Teachers, by CST Algebra I Test Results, 2007-08



See Appendix B for source and technical information.

These data are particularly troubling, given that students who are struggling to reach proficiency on the Algebra I CST are in particular need of teachers who are especially skilled at remediation. This still requires teachers who have deep subject matter content knowledge, so that they have the ability to identify the concepts with which students are struggling, and who have the pedagogical skills to present information in a variety of ways that accommodate students' different learning styles and needs.

Successful implementation of the Algebra I policy requires supports for students and teachers.

Reaction to the State Board's Algebra I decision has been mixed. Some have applauded the policy, noting that it puts teeth into the call for more rigorous curricula for all students. Others have argued that it is unrealistic to expect all schools to be prepared to implement the new requirement or to expect all students to be ready to take Algebra I in the eighth grade—in fact, the California School Boards Association and the Association of California School Administrators have sued the state to revoke the requirement, on the grounds that the SBE did not provide the public with adequate notice about the change and that the SBE overstepped authority vested in the Governor and the legislature (Association of California School Administrators, 2008). In response, in October 2008, a judge granted a temporary restraining order, postponing the requirement and ordering the SBE not to make any further decisions about the Algebra I testing requirement until a court hearing in December 2008.

Regardless of individuals' responses, there is general agreement that significant steps will need to be taken to ensure that students and teachers receive support to meet such high expectations. In response to the SBE's decision, the Secretary of Education estimated that it would take \$400 million to \$660 million per year over the next 3 to 5 years to pay for more algebra teachers, training, and materials (Tucker, 2008). State Superintendent of Public Instruction O'Connell proposed a \$3.1-billion plan to ensure that all students are fully prepared to take Algebra I by the eighth grade. The plan would provide students with a range of supports and interventions: a reduction in class size, professional development for all teachers and administrators in grades kindergarten through 12, instructional materials for general mathematics and Algebra I, and incentives and resources to expand recruitment and retention efforts targeted at mathematics teachers. Still to be determined, however, are the yearly steps and benchmarks needed to determine whether adequate progress toward meeting the requirement is being made.

Whether any supports will be forthcoming is unclear. Elementary teachers, who must teach multiple content areas, including mathematics, are of particular concern. Are they sufficiently prepared to teach mathematics? Do they have the content knowledge to teach students the foundational mathematics skills needed to master algebra content? Given that proficiency in mathematics statewide declines after elementary school, are teachers who teach mathematics content prior to algebra (i.e., pre-algebra) prepared to teach higher-level mathematics concepts beyond basic arithmetic? These questions are particularly critical, given that the majority of teachers in California were trained before the teacher preparation standards set forth under SB 2042 (Alpert) went into effect (in 2004), requiring subject matter training for prospective teachers to be tied to the state's content standards for students.

As with the lessons of class size reduction in the 1990s, large-scale reforms could be strengthened by the consideration of the implications for the teacher workforce. The algebra debate highlights a number of challenges related to both the quantity of mathematics teachers and the quality of their teaching. The state must build an adequate pool of algebra teachers, but it must also invest in efforts to boost the skills and knowledge of existing middle school teachers. Further, the state must ensure that those who teach mathematics in the earlier grades have the skills and knowledge to impart the foundational mathematics concepts needed for students to be successful in algebra. It is imperative that the state adequately fund efforts to recruit, train, and support teachers who provide K-8 mathematics instruction in order for all students to be successful and meet the expectations the state has set for them.

CHAPTER SUMMARY

California is at a critical juncture. Low student achievement, high dropout rates, and inadequate preparation for work and postsecondary education converge at a time of increasingly high expectations for students. The success of tomorrow's workforce to meet the state's future economic needs is inexorably linked to the skill and knowledge of teachers. Regardless of the reform or strategy employed to effect change—from breaking up large, comprehensive high schools to expanding CTE programs to encouraging all students to take Algebra I by the eighth grade—policymakers must always consider the implications for teachers' work and must ensure that teachers have the training and support to implement these policies.

5. CONCLUSIONS

Over the past decade, the Center for the Future of Teaching and Learning, with research support from SRI International, has been tracking the condition of California's teacher workforce. Our work began in the wake of the Class Size Reduction program, which caused a sharp spike in the demand for teachers. Virtually overnight, we found ourselves in a crisis with tens of thousands of classrooms staffed by teachers without adequate preparation. Worse, poor, minority, and low-achieving students were the most likely to be taught by underprepared teachers—and in the highest-need schools, one in every five faculty members were underprepared.

The data in this, our 10th annual report, underscore the progress that we have made as a state. The absolute number of underprepared teachers has been cut dramatically, and an increasing number of those teachers are getting more structured support through the state's intern program. This improvement is the result of several related factors, including the concerted efforts of policymakers at the state and local levels to lower barriers to the profession, increase support for teacher preparation, and attract more qualified candidates into the profession.

Concurrent with these improvements, however, has been a steady increase in expectations for the state's K-12 educational system. Since we began this work, the state has instituted a new testing system aligned with its ambitious standards. In response to the federal No Child Left Behind Act of 2001, the state has established target proficiency levels for all schools—which are ratcheted up regularly until all students are expected to meet the standards by 2013-14. The state also now requires that all students pass a high school exit exam to receive a diploma. Recently, the State Board of Education took another step by calling for all eighth graders to be tested in Algebra I. Although the decision is currently on hold, it underscores the push to raise expectations.

As standards have risen and the severe teacher shortage abated, policymakers and educators have turned greater attention to issues of teaching quality. Teacher candidates must now pass a performance assessment to earn a credential, and preparation institutions can benefit by considering those data as they work to improve their programs. New support structures have been put in place for interns. The state's induction program has been revamped to build on teachers' existing knowledge, skills, and abilities. Some flexibility has been added to state-supported professional development programs. And the state is in the process of launching new systems to better track students and teachers.

Unfortunately, the state's fiscal crisis threatens to undermine much of this progress. Looming cuts to the education budget may result in teacher layoffs—but at a minimum will make teachers' jobs less secure and consequently less attractive to our brightest college graduates. Resources to provide more support for teachers to help students meet the rising standards are less likely to materialize.

Of particular concern is the state of our secondary schools. The proportion of students meeting the state's standards decreases in middle and high school. Only about half of eighth graders take Algebra I, and less than half of those score at the proficient level. Too many students (more than a fifth) fail to graduate from high school, and far too many of those who do graduate are inadequately prepared for postsecondary education or the demanding world of work in the 21st century. It is within this context that we focus our research for this next year on efforts to improve secondary schools in California.

6. RECOMMENDATIONS FROM THE CENTER FOR THE FUTURE OF TEACHING AND LEARNING

For the past 10 years, the Center for the Future of Teaching and Learning has commissioned SRI International to investigate and report on the realities of California's teaching profession. Each year, findings from these reports are shared with members of the *Teaching and California's Future* Task Force as well as other education stakeholders. Input from these individuals informs the development of recommendations for California policymakers and education leaders.

Addressing Teacher Shortages. Although California has made significant strides in decreasing the number of underprepared teachers, major challenges remain. This is no time for complacency, given shortages in high-need schools, core subject matter areas, geographic regions and special needs programs. Further, the State Board of Education's decision to require that eighth-grade students be tested on algebra—now challenged in the courts—has opened serious debate on mathematical literacy and its implications for teacher preparation and professional development in middle schools and in the elementary grades, where success in higher mathematics begins.

We recommend that the Governor and the legislature review (1) evidence of why these shortages continue to exist in certain schools, subject matter areas, and programs where fully prepared teachers are needed most, as well as (2) the scope and viability of existing efforts to ensure equity. Based on these reviews, we recommend the development of a strategic plan designed to ensure access for all students to a fully prepared and effective teacher. With respect to immediate demands to build mathematical literacy, we recommend that the strategic plan identify essential steps along with the corresponding resources needed to strengthen math education in elementary and middle schools over each of the next four years.

Creating a Teacher Development System. California lacks a systemic approach to routinely provide the *numbers* of teachers needed throughout the state and the *quality* of teaching required to ensure students' academic success. A coherent, consistent teacher development system must include a set of reliable measures of teachers' knowledge and skills. These measures should provide a bridge across the components of preparation, induction, professional development, and accomplished teaching.

We recommend that the existing assessments within each component of the teacher development continuum—preparation, induction, evaluation, and accomplished teaching—be modified as necessary to form a more cohesive and coherent teacher development system that promotes access to qualified and effective teachers for all students, builds capacity, eliminates duplication, and focuses on strengthening teaching practice.

Developing a Teacher Workforce Data System. The establishment of CALTIDES, the teacher information data system being developed in response to state statutes and federal reporting requirements, is a step toward providing policymakers with solid, reliable information on which to make decisions related to the state's teacher workforce—but it is only a first step. The information that will be provided under CALTIDES may not be sufficiently robust or detailed to assist policymakers with crucial decision-making. In particular, policymakers need data on the broader dimensions of teacher and administrator development, such as preparation and professional development, as well as timely

information on where teachers and administrators serve and for how long, to evaluate the need for, and effectiveness of, efforts to ensure both equity and quality of teaching for all students.

We recommend that policymakers request the California Department of Education, in collaboration with the Commission on Teacher Credentialing, to develop a long-term plan for a more adequate state data system, including benchmarks of progress and funding estimates.

Examining High School Reform. California is not ensuring that students leave high school ready for postsecondary education, prepared for the workforce, and able to participate fully in civic life. Student performance indicators raise serious questions about the *capacity* of many California high schools to graduate students who are prepared to meet these challenges. Abysmal dropout rates add a sense of urgency to address this problem: one in every five California high school students now drop out of school. The state needs to invest in building teacher workforce capacity as a key strategy to reversing these dropout trends. Further, strengthening teaching must be considered in light of the need for a more cohesive and comprehensive approach to student success, from elementary and middle grades through high school.

We recommend that policymakers focus on identifying ways in which high school teachers and administrators can be effectively prepared and supported in order to provide the instruction, learning environment, and real-world connections that will reverse this trend, especially for those students at risk for dropping out of school.

Providing Adequate Resources and Reasonable Guidelines. The challenge of creating a coherent, consistent, and effective teacher development system in California is directly related to dollars. Recent research beyond our own shows that existing spending patterns and budget requirements may actually work *against* education equity and quality. Further, the deadlines set in state law for local school district budgeting and the state budget process itself are not conducive to sound decision-making. The recent budget crisis is likely to have a very serious impact on the current teacher workforce and the career plans of future teachers. Although many “pink slips” were eventually rescinded, we may have lost effective and experienced teachers to other states. If California is to have the highest expectations in the country for student achievement, we need a reliable school finance system that aligns resources with expectations while addressing wide disparities in the ability of schools to provide adequate support, assistance, and development for teachers.

We recommend reviewing resource levels and approaches designed to promote equity in California in comparison to other states. In addition, we recommend a review of the budget process specific to the realignment between the state and its public schools, with the goal of establishing a more reliable metric for school districts to use as they develop their annual budgets and make staffing decisions.

7. LOOKING AHEAD: FOCUS ON SECONDARY SCHOOL REFORM IN 2008-09

As we move forward with research on secondary school reform, we take as our guide a lesson we have learned time and again over the past decade: an assessment of the potential of a school reform effort must consider the implications for the teacher workforce. We have to ask, “Does the reform require something different of teachers? If so, are the supports in place to ensure that teachers will be able to carry out what they are being asked to do?”

The current efforts to improve the state’s secondary schools reflect policymakers’ goals for improving student achievement, reducing the dropout rate, and better preparing all students with the 21st-century skills necessary to be successful in work, life, and postsecondary education. This growing movement, spurred by foundation funding, has sought to make the high school experience more personalized, challenging, and engaging for students, and is a reflection of a consensus that schools must find ways to curb the dropout problem and ensure that all students are prepared for a range of postsecondary opportunities. Although we know that changing instructional practice is the key to changing student outcomes, it is unclear whether current efforts to reform California’s high schools have clearly articulated the instructional practices that are expected to improve student outcomes and whether the teacher development system is training and supporting teachers to implement these instructional practices.

Consequently, the original data collection in 2008-09 will focus on high school teachers and the implications of the high school reform movement for their preparation and support. We will examine the knowledge, skills, practices, and working environment that high school teachers need to be successful in a range of high school models, and we will assess any gaps between what teachers need in terms of training and professional development and what they have available to them to ensure successful teaching.

As a first step toward identifying the expectations of and challenges for teachers, we will collect data that allow us to describe the current landscape of high schools and the range of reform approaches that are being implemented in California. We will not evaluate any particular approach or reform, but rather attempt to understand the implications of the various approaches for teacher skills, knowledge, and instructional practice. The research will be guided by the following overarching question:

To what extent are California high school teachers prepared for and supported to teach in the reforming California high school of the 21st century?

More specifically, we will address following research questions:

1. What types of reforms are California high schools implementing that emphasize the preparation of students for success in a range of postsecondary options and for success in the global economy of the 21st century?

2. What new knowledge, pedagogical skills, and professional expertise do high school teachers need to prepare students for success within a reforming school?
3. To what extent are high school teachers prepared to teach within a range of reforming high schools? To what extent do high school teachers have access to appropriate professional learning experiences that provide them the knowledge, skills, and expertise to be successful in a range of reforming high schools?
4. What is the composition of the high school teacher workforce? Are teachers in various types of reforming high schools disproportionately inexperienced, underprepared, and/or teaching out of field? To what extent does the composition of the teacher workforce support or challenge a school's efforts to implement reforms?
5. What systems and structures do leaders implement to attract, support, and retain teachers in reforming high schools (e.g., supporting the collaboration of career technical education teachers and subject matter teachers)?³¹
6. To what extent do state policies (e.g., credentialing policies) support or inhibit efforts to prepare and support teachers to teach in a range of reforming high schools?

To answer these research questions, we will engage in a multimethod set of integrated research activities, including analyses of state and federal high school reform policies and initiatives; interviews with local district officials and staff of state and national high school reform organizations; statewide, a representative survey of more than 400 high school principals; case studies of 20 high schools representing the range of reforms being implemented in the state; and analyses of secondary teacher data available through state databases.

The report with the findings from these data collection efforts will be released in December 2009.

³¹ To maintain the study's focus on teachers, we will not address the preparation of and support for school leaders.

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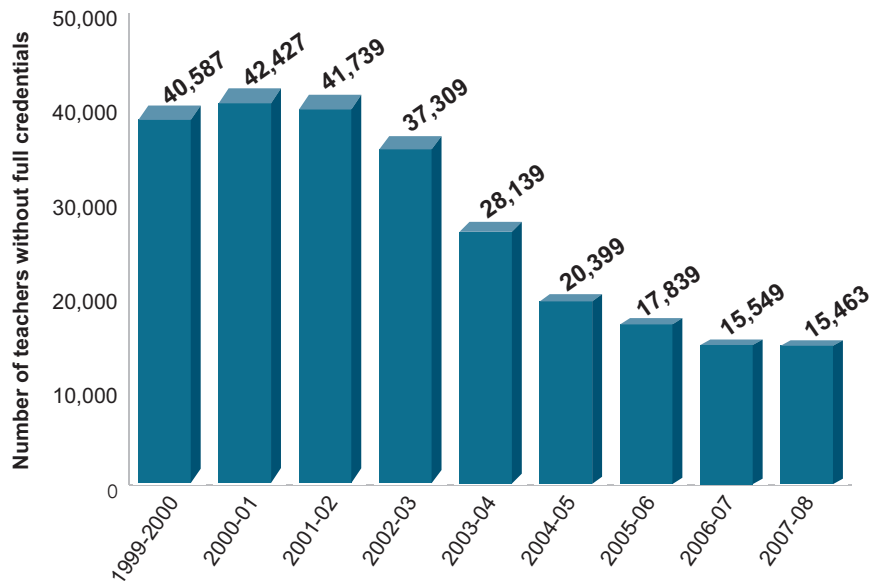
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APPENDIX A

ADDITIONAL TEACHER SUPPLY, DEMAND, AND DISTRIBUTION GRAPHS

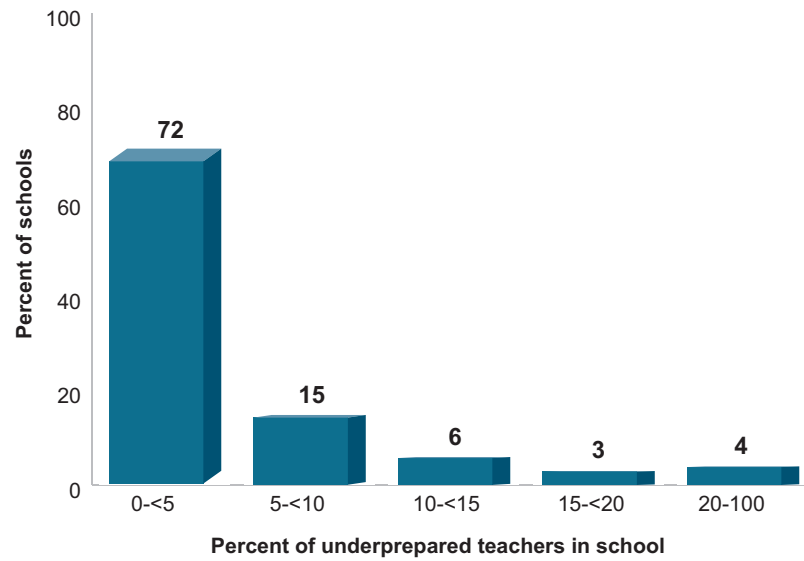
CALIFORNIA TEACHER WORKFORCE

Exhibit A.1 Number of Underprepared Teachers, 1999-2000 to 2007-08



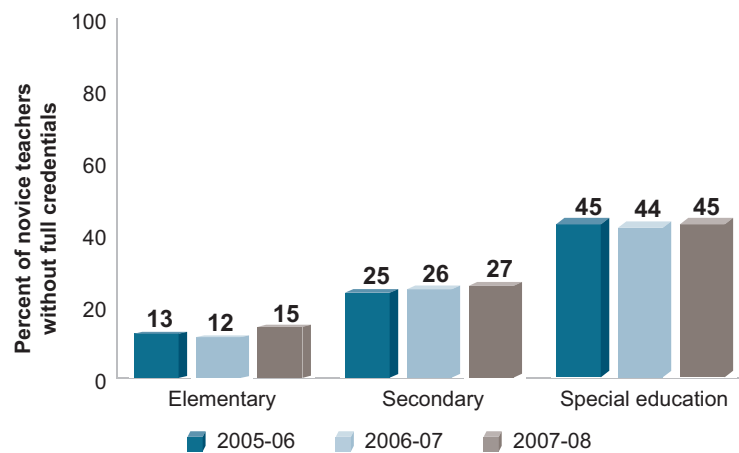
See Appendix B for source and technical information.

Exhibit A.2 Distribution of Schools by School-Level Percentage of Underprepared Teachers, 2007-08

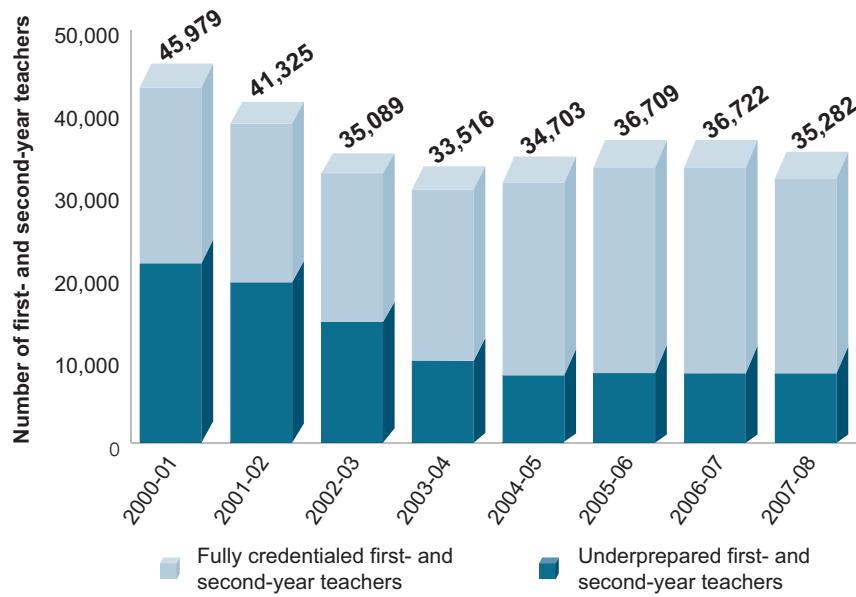


See Appendix B for source and technical information.

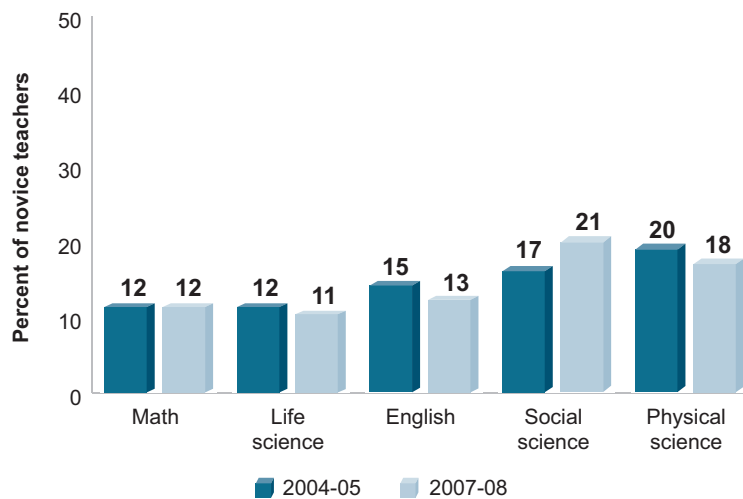
Exhibit A.3 Percentage of Underprepared First- and Second-Year Teachers, by Authorization, 2005-06 to 2007-08



See Appendix B for source and technical information.

Exhibit A.4 Number of Novice Teachers, by Credential Type, 2000-01 to 2007-08

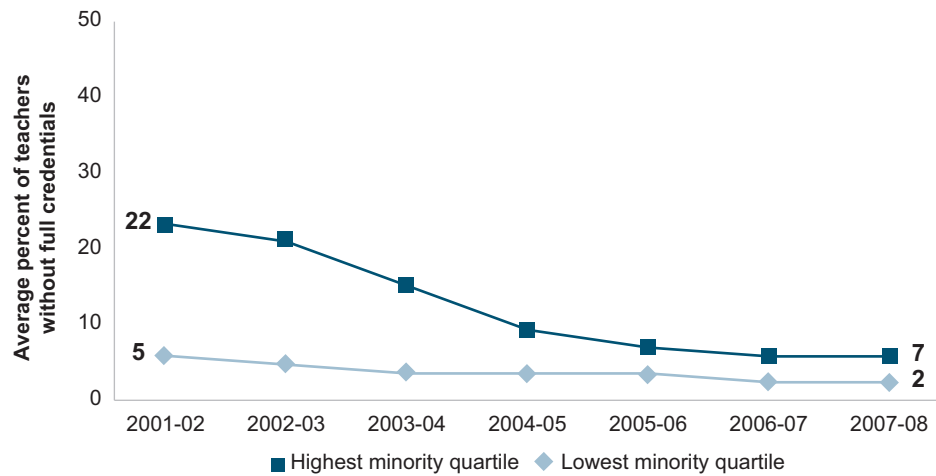
See Appendix B for source and technical information.

Exhibit A.5 Percentage of Out-of-Field High School Teachers in Core Subjects, 2004-05 and 2007-08

See Appendix B for source and technical information.

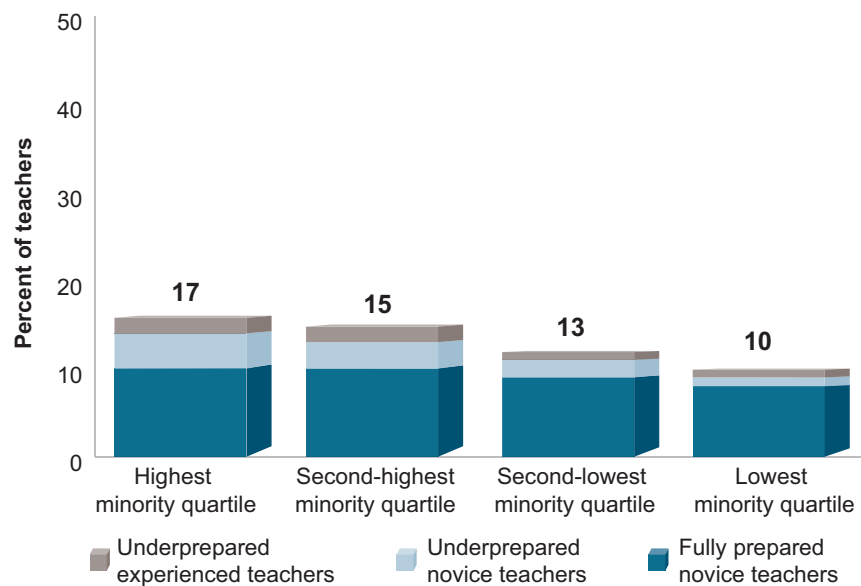
DISTRIBUTION BY SCHOOL-LEVEL MINORITY CATEGORIES

Exhibit A.6 Percentage of Underprepared Teachers in Schools with the Highest and Lowest Percentages of Minority Students, 2001-02 to 2007-08



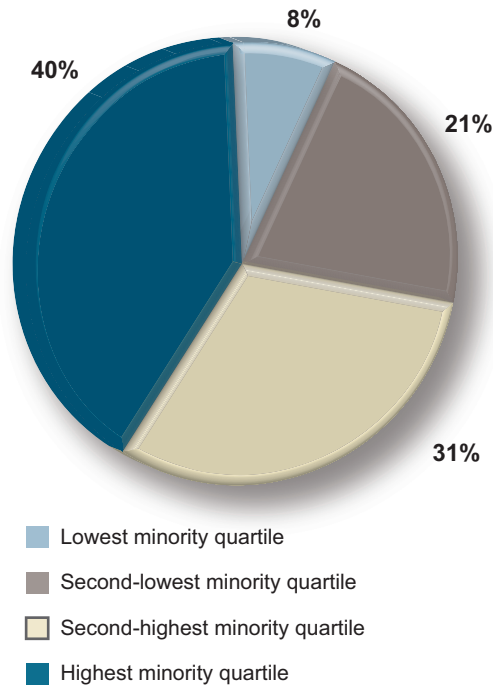
See Appendix B for source and technical information.

Exhibit A.7 Percentage of Underprepared and Novice Teachers, by School-Level Percentage of Minority Students, 2007-08



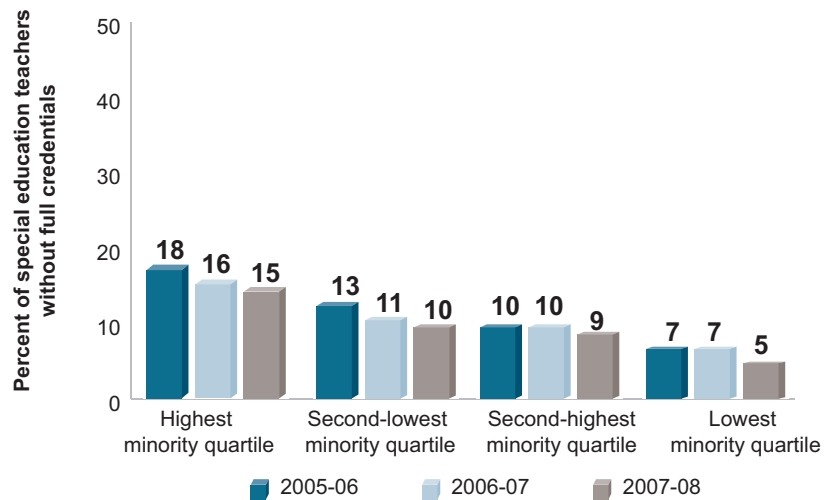
See Appendix B for source and technical information.

Exhibit A.8 Distribution of Interns by School-Level Percentage of Minority Students, 2007-08



See Appendix B for source and technical information.

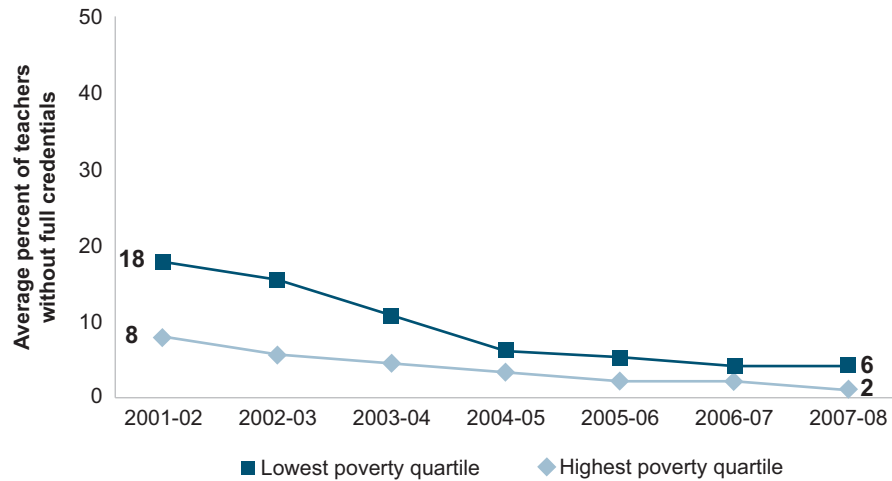
Exhibit A.9 Percentage of Underprepared Special Education Teachers, by School-Level Percentage of Minority Students, 2005-06 to 2007-08



See Appendix B for source and technical information.

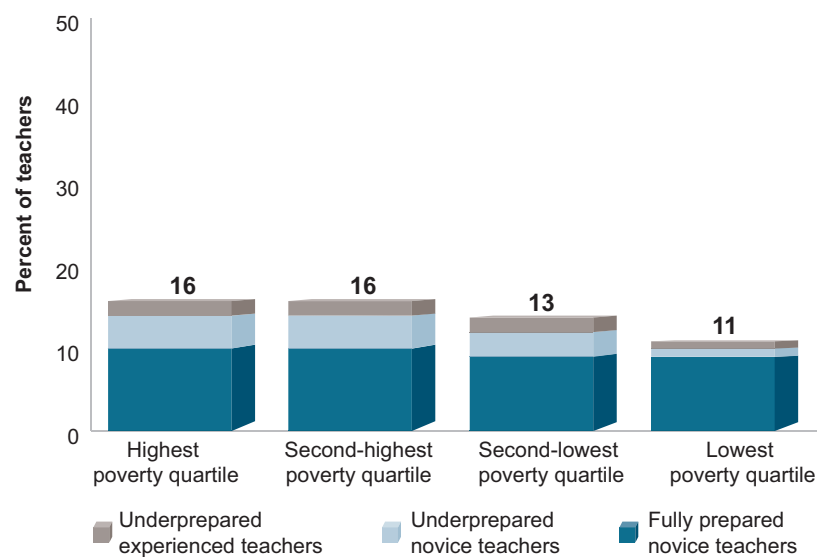
DISTRIBUTION BY SCHOOL-LEVEL POVERTY CATEGORIES

Exhibit A.10 Percentage of Underprepared Teachers in Schools with the Highest and Lowest School-Level Percentages of Students in Poverty, 2001-02 to 2007-08



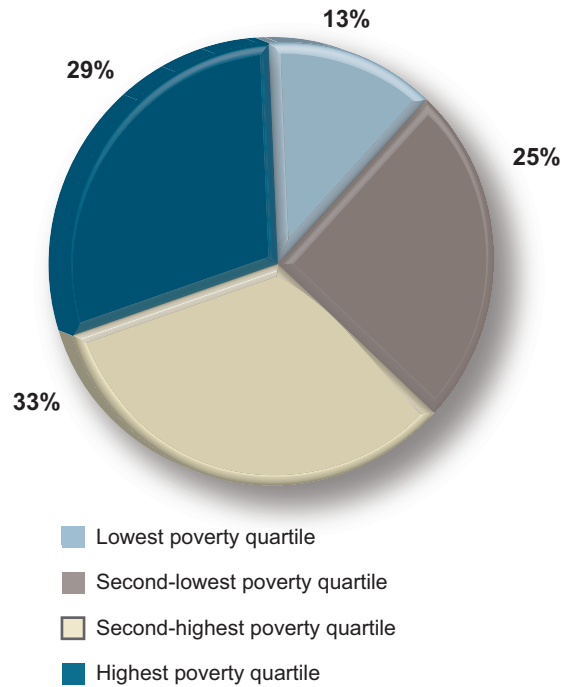
See Appendix B for source and technical information.

Exhibit A.11 Percentage of Underprepared and Novice Teachers, by School-Level Percentage of Students in Poverty, 2007-08



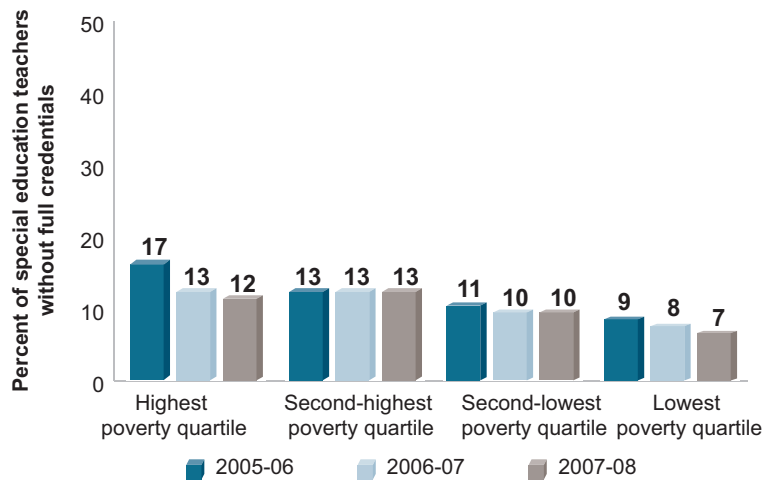
See Appendix B for source and technical information.

**Exhibit A.12 Distribution of Interns
by School-Level Percentage of Students in Poverty, 2007-08**



See Appendix B for source and technical information.

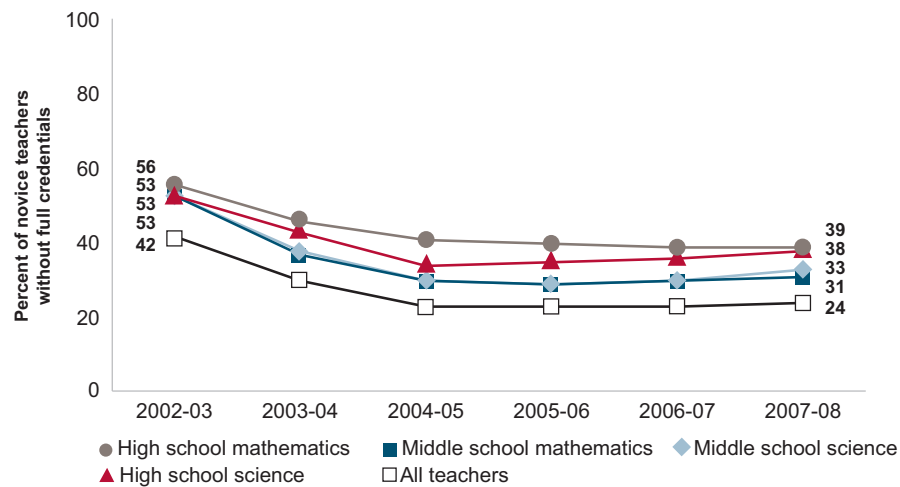
**Exhibit A.13 Percentage of Underprepared Special Education Teachers,
by School-Level Percentage of Students in Poverty, 2005-06 to 2007-08**



See Appendix B for source and technical information.

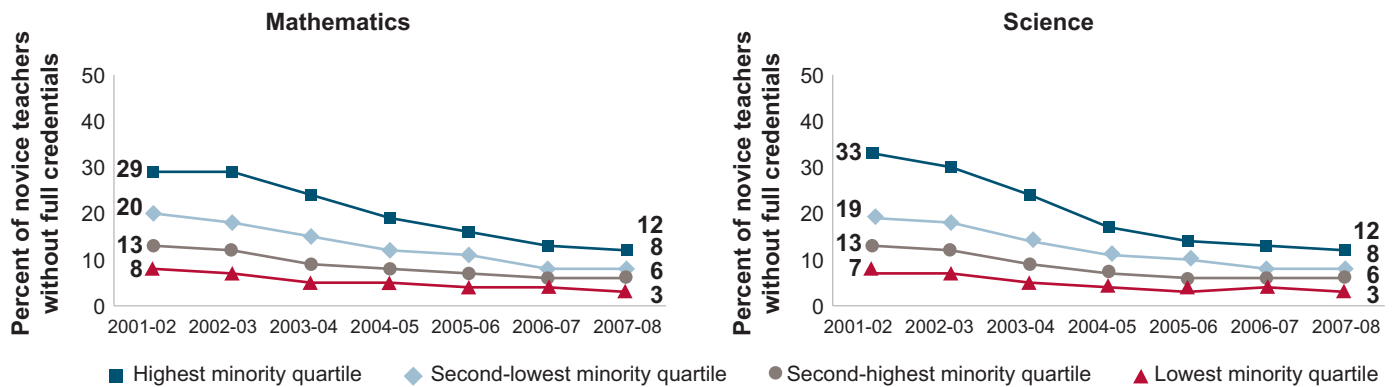
FOCUS ON SCIENCE AND MATH

Exhibit A.14 Percentage of Underprepared First- and Second-Year Mathematics and Science Teachers, 2002-03 to 2007-08



See Appendix B for source and technical information.

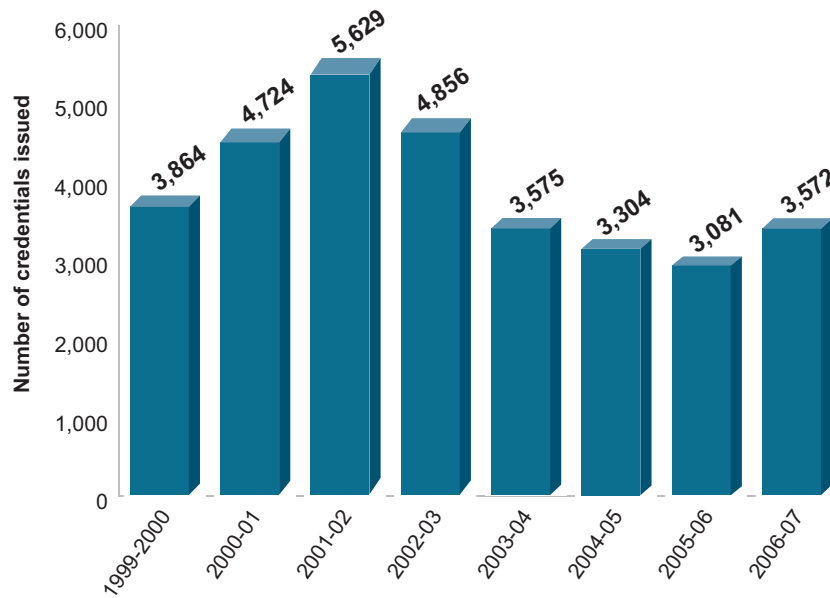
Exhibit A.15 Percentage of Underprepared Mathematics and Science Teachers, by School-Level Percentage of Minority Students, 2001-02 to 2007-08



See Appendix B for source and technical information.

CREDENTIALING

**Exhibit A.16 Number of California Credentials Issued to Teachers Trained Out of State,
1999-2000 to 2006-07**



See Appendix B for source and technical information.

APPENDIX B

SOURCE AND TECHNICAL INFORMATION FOR EXHIBITS

Exhibit 1.1 – CST Results, by Ethnicity, 2004-08. Data were obtained from CDE's Web site at <http://www.cde.ca.gov/nr/ne/yr08/yr08rel110.asp>.

Exhibit 1.2 – CST Results, by Grade and Subject, 2005-08. Data were obtained from CDE's Web site at <http://www.cde.ca.gov/nr/ne/yr08/yr08rel110.asp>. The Life Science CST was first administered in spring 2006; data are unavailable for the 2004-05 school year.

Exhibit 2.1 – Total K-12 Enrollment, 1996-97 to 2007-08. Data were obtained from CDE's DataQuest Web site at <http://dq.cde.ca.gov/dataquest/>.

Exhibit 2.2 – Number of K-12 Teachers in the California Workforce, 1998-99 to 2007-08. Data were obtained from CDE's DataQuest Web site at <http://dq.cde.ca.gov/dataquest/>.

Exhibit 2.3 – California Public K-12 Graded Enrollment Change, 2007-17. Data from the California Department of Finance (DOF) 2008 Series: California K-12 Public Enrollment and High School Graduates are presented in this exhibit. The 2008 Series was obtained from DOF's Web site at <http://www.dof.ca.gov/research/demographic/reports/projections/k-12/>.

Exhibit 2.4 – Actual and Projected K-12 Public School Enrollment, 1993-94 to 2017-18. Data from the California Department of Finance (DOF) 2008 Series: California K-12 Public Enrollment and High School Graduates are presented in this exhibit. The 2008 Series was obtained from DOF's Web site at <http://www.dof.ca.gov/research/demographic/reports/projections/k-12/>.

Exhibit 2.5 – Number of California State Teachers' Retirement System (CalSTRS) Membership Retirements, 1996-97 to 2006-07. Data from the CalSTRS 2007 Comprehensive Annual Financial Report are presented in this exhibit. The 2007 report was obtained from the CalSTRS Web site at http://www.calstrs.com/Help/forms_publications/printed/CurrentCAFR/CAFRall.pdf.

Exhibit 2.6 – Age Distribution of K-12 Public School Teachers, 2007-08. Data from the Professional Assignment Information Form (PAIF) are presented in this exhibit. These data were obtained by special request from CDE.

Exhibit 2.9 – Number of Underprepared Teachers, by Credential Type, 1999-2000 to 2007-08. Data from the PAIF were used for this analysis. These data were obtained from CDE's CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a "full credential" (i.e., preliminary, professional clear, or life credential). Teachers with "more than one underprepared credential type" are those teachers who reported holding a district or university intern credential and an emergency permit, pre-intern certificate, or waiver; these teachers cannot be

placed in one of the other two categories. Teachers who did not report holding any type of credential, permit, or certificate were identified as “missing credential information.”

Exhibit 2.10 – Top 10 California Counties by Number and Percentage of Underprepared Teachers, 2007-08. Data from DataQuest are presented in this exhibit. These data were obtained from CDE’s DataQuest Web site at <http://dq.cde.ca.gov/dataquest/>.

Exhibit 2.11 – Percentage of Underprepared Teachers, by Authorization, 2000-01 to 2007-08. Data from the PAIF were used for this analysis. These data were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Only full-time teachers are included in this analysis. For each credential authorization—elementary, secondary, and special education—the percentage of underprepared teachers (those who reported on the PAIF that they held a credential, permit, or certificate other than a “full credential”) is calculated as a proportion of full-time teachers. Teachers could report more than one type of credential authorization. Teachers who did not report holding any type of credential, permit, or certificate are not included in this analysis.

Exhibit 2.12 – Average Percentage of Underprepared Teachers in Schools in the Highest and Lowest API Achievement Quartiles, 2001-02 to 2007-08. For each year presented in this exhibit, three data files were merged to conduct the analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the Academic Performance Index (API) Growth data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The API Growth data file was obtained from CDE’s Testing and Accountability Web site at <http://www.cde.ca.gov/ta/ac/ap/apidatafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Only full-time teachers are included in this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates. The numbers of schools included in these analyses vary each year because (1) the number of open schools changes from year to year as schools open and close, and (2) the number of schools with complete data in all three files changes from year to year (see Exhibit B.1).

Exhibit B.1 Number of Schools, by API Quartile, for API Analyses

API Quartile	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Highest achievement quartile	1,737	1,830	1,878	1,920	1,970	2,027	2,006
Second-highest achievement quartile	1,747	1,833	1,887	1,952	2,016	1,991	2,029
Second-lowest achievement quartile	1,745	1,855	1,896	1,958	1,965	2,006	2,038
Lowest achievement quartile	1,764	1,859	1,892	1,970	2,025	1,986	2,039
Total	6,993	7,377	7,553	7,800	7,976	8,010	8,112

Exhibit 2.13 – Percentage of Underprepared and Novice Teachers, by API

Achievement Quartile, 2007-08. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the API Growth data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE's CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The API Growth data file was obtained from CDE's Testing and Accountability Web site at <http://www.cde.ca.gov/ta/ac/ap/apidatafiles.asp>. All non-traditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Only full-time teachers are included in this analysis. Novice teachers are those who reported 0, 1, or 2 years of teaching experience on the PAIF. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a "full credential" (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates. See Exhibit B.1 for the number of schools included in this analysis.

Exhibit 2.14 – Percentage of Underprepared and Novice Teachers, by School-

Level Percentage of 10th-Grade Students Passing the CAHSEE, 2007-08. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the California High School Exit Exam (CAHSEE) Statewide Research File. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE's CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The CAHSEE Statewide Research File was obtained from CDE's CAHSEE Web site at <http://cahsee.cde.ca.gov/datafiles.asp>.

All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Only full-time teachers are included in this analysis. Novice teachers are those who reported 0, 1, or 2 years of teaching experience on the PAIF. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a "full credential" (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates.

Tenth-grade students were given one opportunity to take the CAHSEE. Students absent on the day of the examination were generally given a makeup test at a later date during the school year. To determine the total number of 10th-grade students who passed the English portion of the CAHSEE, the variable "combined administration" was used to capture students who took the examination on either the established test date or the makeup test date. To protect student privacy, the state gave all schools with 10 or fewer 10th-grade students taking the examination a value of "0" for the percentage of students passing the English or the mathematics portion of the examination. Because this "0" did not mean that no students passed the English or mathematics portion of the CAHSEE, schools with 10 or fewer students in either English or mathematics are not included in the analysis.

Exhibit 3.1 – Number of Enrollees in Teacher Preparation Programs, 2001-02

to 2005-06. Data from the California Commission on Teacher Credentialing's (CCTC) Teacher Supply in California 2006-07 report are presented in this exhibit. These data were obtained from the CCTC's Web site at http://www.ctc.ca.gov/reports/TS_2006-2007_AnnualRpt.pdf.

Exhibit 3.2 – Number of New Preliminary Credentials Issued by IHEs, 1998-99 to 2006-07. Data from the CCTC are presented in this exhibit. Data for 1998-99 were obtained from the CCTC by special request. Data for 1999-2000 through 2006-07 were obtained from the CCTC’s annual Teacher Supply in California reports at <http://www.ctc.ca.gov/reports/leg-reports-archive.html>. “New preliminary credentials” include first-time, new-type preliminary or professional clear credentials. (First-time, new-type professional clear credentials typically represent a newly credentialed teacher, not an experienced veteran earning a Level II credential.) Intern credentials are not included in this exhibit.

Exhibit 3.5 – Number of New University and District Intern Credentials Issued, 1996-97 to 2006-07. Data from the CCTC are presented in this exhibit. Data for 1996-97 through 1998-99 were obtained from the CCTC by special request. Data for 1999-2000 through 2006-07 were obtained from the CCTC’s annual Teacher Supply in California reports at <http://www.ctc.ca.gov/reports/leg-reports-archive.html>.

Exhibit 3.6 – University Intern Credentials, 2002-03 to 2006-07. Data from the CCTC are presented in this exhibit. These data were obtained from the CCTC’s annual Teacher Supply in California reports at <http://www.ctc.ca.gov/reports/leg-reports-archive.html>.

Exhibit 3.7 – Distribution of Interns by School-Level API, 2007-08. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the API Growth data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The API Growth data file was obtained from CDE’s Testing and Accountability Web site at <http://www.cde.ca.gov/ta/ac/ap/apidatafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. This analysis includes teachers who responded on the PAIF that they were a “university intern” or a “district intern.” Only full-time teachers are included in this analysis. See Exhibit B.1 for numbers of schools included in each quartile.

Exhibit 3.10 – Percentage of Fully Credentialed Teachers with English Learner Authorization, 2002-03 to 2007-08. Data from the PAIF were used to conduct this analysis. Only full-time teachers are included in the analysis. Teachers who reported they were fully credentialed and were authorized to teach bilingual education, English Language Development, or Specially Designed Academic Instruction in English are defined as “fully credentialed teachers with English learner authorization.”

Exhibit 4.1 – Percentage of Out-of-Field, Underprepared, and Novice High School Teachers, by Assignment, 2007-08. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) Course Data by Assignment (Assign07). These data files were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Only full-time teachers in California high school teachers are included in this analysis. Teachers who indicated they were fully credentialed but did not have subject matter authorization in their teaching assignment are defined as “out-of-field.” Teachers were identified as being “assigned” to a subject if they reported on the PAIF that they taught at least one class in a core subject—English, mathematics, social science, physical science, or life science. Teachers who reported on the PAIF that they held a credential, permit, or certificate

other than a “full credential” are defined as “underprepared.” Teachers who reported teaching 0, 1, or 2 years on the PAIF and indicate having a full credential and subject matter authorization in their assigned subject are defined as “fully credentialed, in-field novice teachers.”

Exhibit 4.4 – Percentage of Underprepared Mathematics and Science Teachers, 2002-03 to 2007-08. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the Course Data by Assignment (Assign07). These data files were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Only full-time teachers are included in this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential other than a “full” credential (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates. Teachers were identified as being “assigned” to mathematics if they reported on the PAIF that they taught at least one mathematics course. Teachers were identified as being “assigned” to science if they reported on the PAIF that they taught at least one science course.

Exhibit 4.5 – Percentage of Underprepared Middle and High School Mathematics and Science Teachers, by API Quartile, 2001-02 to 2007-08. For each year presented in this exhibit, four data files were merged to conduct the analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, (3) Course Data by Assignment (Assign07), and (4) the API Growth data file. The List of California Public Schools and Districts, the PAIF, and Assign07 data files were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The API Growth data file was obtained from CDE’s Testing and Accountability Web site at <http://www.cde.ca.gov/ta/ac/ap/apidatafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Only full-time teachers are included in this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential other than a “full” credential (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates. Teachers were identified as being “assigned” to mathematics if they reported on the PAIF that they taught at least one mathematics course. Teachers were identified as being “assigned” to science if they reported on the PAIF that they taught at least one science course. See Exhibit B.1 for numbers of schools included in each API quartile.

Exhibit 4.8 – Credential Status of Middle School Algebra Teachers, 2007-08. Two data files were merged to conduct this analysis: (1) Course Data by Assignment (Assign07) and (2) the PAIF. These data files were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Only full-time teachers are included in this analysis. Middle school algebra teachers are defined as teachers who indicated they had a Beginning Algebra or Algebra I assignment and taught grade 6, 7, or 8 on the Course Data by Assignment form. Teachers who reported on the PAIF that they held a credential, permit, or certificate other than a “full credential” are defined as “underprepared.” Teachers who reported on the PAIF that they were fully credentialed but did not have a math subject matter authorization are defined as “fully credentialed without a math authorization.” Teachers who indicated on the PAIF they were fully credentialed and also held another certification (e.g., intern, emergency) are defined as “more than

one credential type.” Teachers who reported on the PAIF that they were fully credentialed and had a math subject matter authorization are defined as “fully credentialed with a math authorization.”

Exhibit 4.9 – Average percentage of Fully Credentialed, Math-Authorized Middle School Algebra Teachers, by CST Algebra I Test Results, 2007-08. Three data files were merged to conduct this analysis: (1) the PAIF, (2) the California Standardized Testing and Reporting (STAR) Statewide Research File, and (3) Course Data by Assignment (Assign07). The PAIF and the Course Data by Assignment files were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The STAR Statewide Research File was obtained from CDE’s STAR Web site at <http://star.cde.ca.gov/star2008/viewreport.asp?rf=True&ps=True>. Only full-time teachers are included in this analysis. Middle school algebra teachers are defined as teachers who indicated they had a Beginning Algebra or Algebra I assignment and taught grades 6, 7, or 8 on the Course Data by Assignment form. Middle school algebra teachers (as defined above) who reported on the PAIF that they were fully credentialed and had a math subject matter authorization are included in this analysis. Students, as indicated in the STAR research file, who took the CST Algebra I test in the 2008 administration and were in grade 6, 7, or 8 during the time of administration are included in this analysis.

Exhibit A.1 – Number of Underprepared Teachers, 1999-2000 to 2007-08. Data from the PAIF were used for this analysis. These data were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>.

Exhibit A.2 – Distribution of Schools by School-Level Percentage of Underprepared Teachers, 2007-08. Two data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts and (2) the PAIF. These data files were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates.

Exhibit A.3 – Percentage of Underprepared First- and Second-Year Teachers, by Authorization, 2005-06 to 2007-08. Data from the PAIF were used for this analysis. These data were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Only full-time teachers who reported that they had 0, 1, or 2 years of teaching experience are included in this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). Teachers who did not report holding any type of credential, permit, or certificate are not included in this analysis.

Exhibit A.4 – Number of Novice Teachers, by Credential Type, 2000-01 to 2007-08. Data from the PAIF were used for this analysis. These data were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Only full-time teachers who reported that they had 0, 1, or 2 years of teaching experience are included in this analysis. Underprepared teachers are teachers who responded on the

PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). Teachers who did not report holding any type of credential, permit, or certificate are not included in this analysis.

Exhibit A.5 – Percentage of Out-of-Field High School Teachers in Core Subjects, 2004-05 and 2007-08. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) Course Data by Assignment (Assign07). These data files were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. Only full-time teachers in California high schools are included in this analysis. Teachers who indicated they were fully credentialed but did not have subject matter authorization in their assigned subject are defined as “out-of-field.” Teachers were identified as being “assigned” to a subject if they reported on the PAIF that they taught at least one class in a core subject—English, mathematics, social science, physical science, or life science. Physical science assignments are limited to chemistry, physics, and physical science courses; life science assignments are limited to biology courses. Teachers with earth science, integrated/coordinated science, or other science assignments (e.g., astronomy, zoology, oceanography) are not included in the analysis. Teachers can have more than one assignment. For example, a teacher who teaches three periods of biology and two periods of English would have an English assignment and a life science assignment, both of which require the teacher to have the proper single-subject authorization.

Exhibit A.6 – Percentage of Underprepared Teachers in Schools with the Highest and Lowest Percentages of Minority Students, 2001-02 to 2007-08. For data for 2001-02 to 2004-05, 2006-07, and 2007-08, three data files were merged to conduct the analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the Enrollment by Ethnic Group and School aggregate data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The Enrollment by Ethnic Group and School aggregate data file was obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/sd/cb/studentdatafiles.asp>.

In 2005-06, the Enrollment by Ethnic Group and School aggregate data file was not released. The School Information Form (SIF) - Section B was used to calculate school-level percentage of minority students and merged with the List of California Public Schools and Districts and the PAIF. The SIF - Section B was obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/sd/cb/studentdatafiles.asp>.

All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates.

The numbers of schools included in these analyses vary each year because (1) the number of open schools changes from year to year as schools open and close; (2) the number of schools with complete data in all three files changes from year to year; and

(3) for 2005-06, we had to use a different data file to calculate minority percentages, and many schools did not have complete data in this file (see Exhibit B.2 for the numbers of schools included in this analysis).

Exhibit B.2 Number of Schools, by School-Level Minority, for Minority Analyses

Percent of Nonwhite Student Populations	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Lowest minority quartile	1,859	1,900	1,939	2,006	1,864	1,877	1,867
Second-lowest minority quartile	1,866	1,902	1,947	2,000	1,864	1,877	1,869
Second-highest minority quartile	1,852	1,898	1,938	2,007	1,865	1,877	1,868
Highest minority quartile	1,857	1,906	1,950	2,012	1,865	1,877	1,869
Total	7,434	7,606	7,774	8,025	7,458	7,508	7,473

Exhibit A.7 – Percentage of Underprepared and Novice Teachers, by School-Level Percentage of Minority Students, 2007-08. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the SIF - Section B. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE's CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The SIF - Section B was obtained from CDE's CBEDS Web site at <http://www.cde.ca.gov/ds/sd/cb/studentdatafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Novice teachers are those who reported 0, 1, or 2 years of teaching experience on the PAIF. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a "full credential" (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates. See Exhibit B.2 for the numbers of schools included in this analysis.

Exhibit A.8 – Distribution of Interns by School-Level Percentage of Minority Students, 2007-08. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the SIF - Section B. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE's CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The SIF - Section B was obtained from CDE's CBEDS Web site at <http://www.cde.ca.gov/ds/sd/cb/studentdatafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. This analysis includes teachers who responded on the PAIF that they were a "university intern" or a "district intern." Only full-time teachers are included in this analysis. See Exhibit B.2 for numbers of schools included in this analysis.

Exhibit A.9 – Percentage of Underprepared Special Education Teachers, by School-Level Percentage of Minority Students, 2005-06 to 2007-08. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the SIF - Section B. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE's CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The SIF - Section B was obtained from CDE's CBEDS Web site at <http://www.cde.ca.gov/ds/sd/cb/studentdatafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Only full-time teachers are included in this analysis. Underprepared special education teachers are teachers who responded on the PAIF that they had a special education authorization and held a credential, permit, or certificate other than a "full credential" (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates. See Exhibit B.2 for the numbers of schools included in this analysis.

Exhibit A.10 –Percentage of Underprepared Teachers in Schools with the Highest and Lowest School-Level Percentages of Students in Poverty, 2000-01 to 2007-08. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the Free and Reduced Price Meals data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE's CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The Free and Reduced Price Meals data file was obtained from CDE's CalWORKs Web site at <http://www.cde.ca.gov/ds/sh/cw/filesafdc.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a "full credential" (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates. See Exhibit B.3 for the numbers of schools included in this analysis.

Exhibit B.3 Number of Schools, by School-Level Poverty, for Poverty Analyses

Poverty Level	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Lowest poverty quartile	2,114	2,165	2,160	2,263	1,982	1,935	2,004	1,939
Second-lowest poverty quartile	2,113	2,167	2,237	2,262	1,983	1,934	2,004	1,941
Second-highest poverty quartile	2,115	2,166	2,157	2,264	1,982	1,936	2,004	1,940
Highest poverty quartile	2,114	2,167	2,292	2,263	1,983	1,936	2,005	1,941
Total	8,456	8,665	8,846	9,052	7,930	7,741	8,017	7,761

Note: School-level percentage of students receiving free or reduced-price lunches is used as the measure of poverty.

Exhibit A.11 – Percentage of Underprepared and Novice Teachers, by School-Level Percentage of Students in Poverty, 2007-08. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the Free and Reduced Price Meals data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The Free and Reduced Price Meals data file was obtained from CDE’s CalWORKs Web site at <http://www.cde.ca.gov/ds/sh/cw/filesafdc.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Novice teachers are those who reported 0, 1, or 2 years of teaching experience on the PAIF. Underprepared teachers are teachers who responded on the PAIF that they held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates. See Exhibit B.3 for the numbers of schools included in this analysis.

Exhibit A.12 – Distribution of Interns by School-Level Percentage of Students in Poverty, 2007-08. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the Free and Reduced Price Meals data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The Free and Reduced Price Meals data file was obtained from CDE’s CalWORKs Web site at <http://www.cde.ca.gov/ds/sh/cw/filesafdc.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. This analysis includes teachers who responded on the PAIF that they were a “university intern” or a “district intern.” Only full-time teachers are included in this analysis. See Exhibit B.3 for the numbers of schools included in this analysis.

Exhibit A.13 – Percentage of Underprepared Special Education Teachers, by School-Level Percentage of Students in Poverty, 2005-06 to 2007-08. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) the Free and Reduced Price Meals data file. The List of California Public Schools and Districts and the PAIF data files were obtained from CDE’s CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The Free and Reduced Price Meals data file was obtained from CDE’s CalWORKs Web site at <http://www.cde.ca.gov/ds/sh/cw/filesafdc.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from the analysis. Only full-time teachers are included in this analysis. Underprepared special education teachers are teachers who responded on the PAIF that they had a special education authorization and held a credential, permit, or certificate other than a “full credential” (i.e., preliminary, professional clear, life credential). This definition of underprepared includes teachers holding intern credentials or certificates. See Exhibit B.3 for the numbers of schools included in this analysis.

Exhibit A.14 – Percentage of Underprepared First- and Second-Year Mathematics and Science Teachers, 2002-03 to 2007-08. Three data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, and (3) Course Data by Assignment (Assign07). These data files were obtained from CDE's CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Only full-time teachers are included in the analysis. Novice teachers are those who reported 0, 1, or 2 years of teaching experience on the PAIF. Underprepared teachers are teachers who responded on the PAIF that they held a credential other than a "full" credential (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates. Teachers were identified as being "assigned" to mathematics if they reported on the PAIF that they taught at least one mathematics course. Teachers were identified as being "assigned" to science if they reported on the PAIF that they taught at least one science course.

Exhibit A.15 – Percentage of Underprepared Mathematics and Science Teachers, by School-Level Percentage of Minority Students, 2001-02 to 2007-08. Four data files were merged to conduct this analysis: (1) the List of California Public Schools and Districts, (2) the PAIF, (3) Course Data by Assignment (Assign07), and (4) the SIF - Section B. The first three data files were obtained from CDE's CBEDS Web site at <http://www.cde.ca.gov/ds/ss/cb/staffdatafiles.asp>. The fourth data file, SIF – Section B, was obtained from CDE's CBEDS Web site at <http://www.cde.ca.gov/ds/sd/cb/student-datafiles.asp>. All nontraditional schools, such as adult, vocational, or state special schools or other alternative schools, are excluded from this analysis. Only full-time teachers are included in this analysis. Underprepared teachers are teachers who responded on the PAIF that they held a credential other than a "full" credential (i.e., preliminary, professional clear, or life credential). This definition of underprepared includes teachers holding intern credentials or certificates. Teachers were identified as being "assigned" to mathematics if they reported on the PAIF that they taught at least one mathematics course. Teachers were identified as being "assigned" to science if they reported on the PAIF that they taught at least one science course. See Exhibit B.2 for the numbers of schools included in this analysis.

Exhibit A.16 – Number of California Credentials Issued to Teachers Trained Out of State, 1999-2000 to 2006-07. Data from the CCTC are presented in this exhibit. These data were obtained from the CCTC's annual Teacher Supply in California reports at <http://www.ctc.ca.gov/reports/leg-reportsarchive.html>.

APPENDIX C

AUTHORIZATIONS TO TEACH MATHEMATICS

Credential Type	Eligible Courses	Settings	Notes
Multiple Subject Credential	Math content grades 12 and below but limited by the setting	Math in Self-Contained Classrooms or Core settings ³²	This credential stands on its own. NCLB compliant for self-contained classrooms only. Holders can complete HOUSSE or VPSS through employer for Core NCLB compliance.
Single Subject Credential in Mathematics	All courses	Departmentalized Classrooms—all Grade Levels	This credential stands on its own. NCLB Compliant
Single Subject Credential in Foundational-Level Mathematics	General Math, Consumer Math, Algebra, Geometry, Probability and Statistics	Departmentalized Classrooms—all Grade Levels	This credential stands on its own. NCLB Compliant
Subject Matter Authorization in Mathematics	Math content grades 9 and below	Departmentalized Classrooms—all Grade Levels	This is an add-on authorization and may only be added to a Single Subject or Multiple Subject credential. NCLB Compliant
Supplementary Authorization in (Introductory) Mathematics	Math content grades 9 and below	Departmentalized Classrooms—all Grade Levels	This is an add-on authorization and may only be added to a Single Subject or Multiple Subject credential. (Preceded the Subject Matter Authorization, but remains an option as it is an appropriate assignment.) Holders can complete HOUSSE or VPSS through employer for NCLB compliance.
Short-Term Staff Permit in Mathematics	All courses	Departmentalized Classrooms—all Grade Levels	Issued for one year at employer request. Not renewable. Not NCLB Compliant
Provisional Intern Permit in Mathematics	All courses	Departmentalized Classrooms—all Grade Levels	Issued for one year at employer request. Renewable one time if individual takes all appropriate subject matter exams. Not NCLB Compliant
Local Teaching Assignment Option (LTAO)	All courses	Departmentalized Classrooms—all Grade Levels	Available only for fully credentialed teachers. Is a local level employment option with approval by local governing board on a year-to-year basis and teacher consent. Holders can complete HOUSSE or VPSS through employer for NCLB compliance.
Single Subject Limited Assignment Permit Mathematics	All courses	Departmentalized Classrooms—all Grade Levels	Available only for fully credentialed teachers. May only be issued for three consecutive one-year terms in a specific subject area. Renewal requires completion of 6 semester units of course work in the subject area. Holders can complete HOUSSE or VPSS through employer for NCLB compliance.

Source: CCTC (2008).

³² A core setting is when two or more subjects are taught to the same group of students – which may include Algebra I as one of those subjects.



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Working to improve education for all students by strengthening the teaching profession

California's Teaching Force

Key Issues and Trends

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